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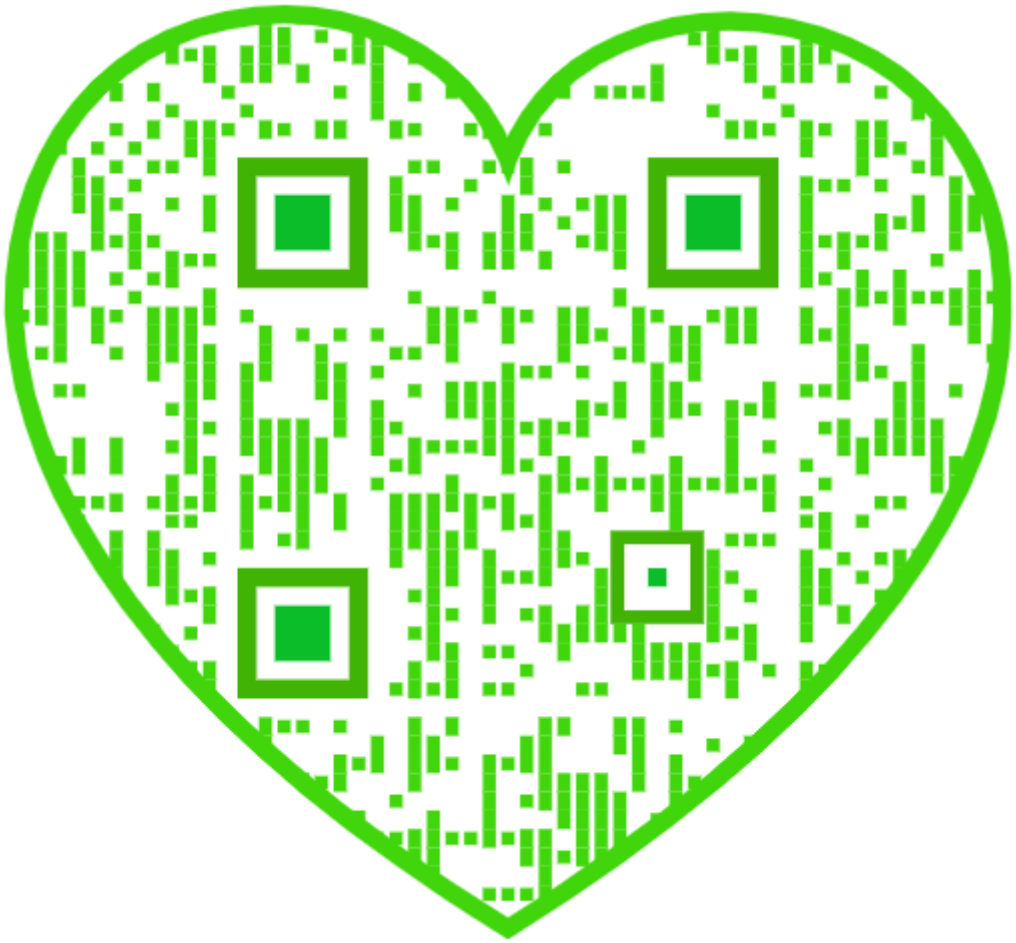
SHOOK'S GUIDE

FOR

STOCK BREEDERS.



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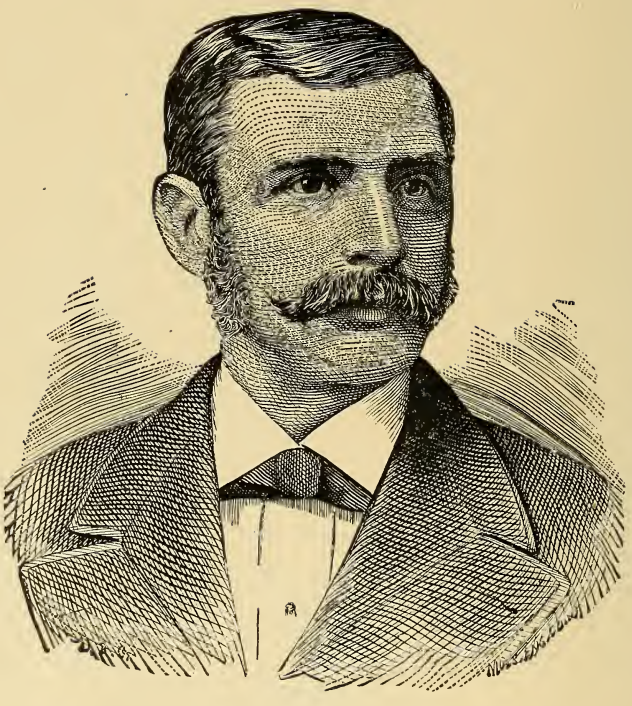

Yours, O. B. Shook

SHOOK'S GUIDE

FOR

STOCK BREEDERS

A

PLAIN, MODERN, PRACTICAL WORK

GIVING THE

ORIGIN, DEVELOPMENT, AND PRESENT CONDITION

OF THE

AMERICAN STOCK,

AS WELL AS FULL INSTRUCTIONS FOR BREEDING, REARING, AND MANAGEMENT OF THE SAME,

TOGETHER WITH

A VAST AMOUNT OF VALUABLE MISCELLANEOUS INFORMATION FOR STOCKMEN, AND A PRACTICAL TREATISE ON

HOG CHOLERA, SWINE FEVER,

AND THE VARIOUS DISEASES OF DOMESTIC ANIMALS, AND THE PROPER TREATMENT FOR THE SAME.

By J. B. SHOOK.

COLUMBUS, O.:
SHOOK'S STOCK REMEDY CO.,
Publishers.
1887.

180 80.S

Entered according to Act of Congress, in the year 1885.

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Columbus, O.

TO THE

AMERICAN FARMERS AND STOCK BREEDERS,

I RESPECTFULLY DEDICATE

THIS WORK.

DEVOTED TO THEIR INTEREST AND SERVICE.

PREFACE.

The object of the author in offering this work to the public is to furnish to American stockmen a modern, concise, and reliable treatise on the breeding and rearing of domestic animals, and the proper treatment of their diseases.

In this work, especial attention has been given to the diseases of swine and poultry, as the experience of the author has shown him that such diseases as Hog Cholera, Swine Fever, and similar diseases, and the various diseases of poultry, and the proper treatment of the same, are less understood than the ailments of other animals, and their treatment.

Believing that no disease exists for which nature has failed to supply the proper remedy, the author, many years since, began the study of these diseases, and the success which has attended his treatment of the same, has fully confirmed his teachings, that domestication should not be allowed to change the physical condition of swine, and that artificial means should be employed to supply what nature requires. Intelligently acting upon this belief, the author has demolished many old theories, and a simple, practical, and efficient course of treatment for swine and poultry has superceded the unsuccessful methods usually employed.

The increasing demand for information concerning the modern methods of breeding and rearing domestic animals, also as to their diseases and treatment, especially those of swine, render a work of this kind indispensable as a book of reference.

The opportunity which the author has had to gather information by reading and observation, as well as his years of practice in breeding and handling stock, and his many years' experience and extensive practice in the field, in the treating of diseased swine and other stock, has enabled him to give to the public a work which, in his judgment, will fully meet the requirements of the American stockmen.

The author, in this work, has given to the public, not only his own ideas, but has, in many instances, furnished good, practical suggestions from prominent writers, as well as the modes of treatment practiced and the remedies used by some of the most learned veterinarians and scientists in the land.

It is written in plain English, and is free from technicalities, which so frequently blind the average reader. Common terms are used in describing symptoms, treatment, and remedies, enabling any one to readily understand the nature of all the diseases and how to treat them; thus peculiarly adapting it to the wants of the farmer and stock-breeder.

It has been condensed into the smallest possible space, thus avoiding all superfluous reading, and the contents so arranged that any subject can be found at a glance, and the information wanted quickly and easily obtained.

By a careful examination of this work it can readily be seen that it contains a plain, practical, modern and improved treatment of all the various diseases of swine and poultry never before published either through Stock or Veterinary works, formulas or through the press; and that it will bear the most critical examination, as well as the severest test.

There is no other work of this kind published — within my knowledge — upon which there has been so much time and practical experience spent in its com-

pletion, nor none sold and tried under as severe tests, and is as highly endorsed and recommended by such an array of men of practical experience. Several hundred of my swine treatise in pamphlet and book form, were sold as a test to farmers and swine breeders, with the understanding that they could read and test the work, and if not satisfactory they could return them. Ninety-eight percent of them were kept and highly endorsed. And now that my work is revised, improved and simplified, I hope it will give universal satisfaction.

During my extensive practice in treating diseased swine, which has brought me in pleasant intercourse with many of the most prominent breeders and extensive feeders, as well as intelligent farmers, and in sincere appreciation of their names and influence in commendation and endorsement of my system of treatment, or in testimony of services in treating their diseased swine, I would to them, courteously inscribe this volume.

PUBLISHERS' PREFACE.

Having made arrangements with Professor J. B. Shook, for the publication and sale of his work, as well as the manufacture and sale of his swine and poultry remedies, also for his services to treat diseased herds of swine when requested, we wish to respectfully inform the public of these facts, and say, that they can rely upon Prof. Shook, promptly attending all calls, where expenses are guaranteed, or the instructions as given in this book giving entire satisfaction.

This book, if carefully read and studied, will be found a practial educator for the general farmer or those interested in stock. It will not only teach them how to successfully treat all the fatal diseases to which our domestic animals are now subject, but also, to intelligently discuss any subject pertaining to them; as, to where and how the breeds originated and their characteristics, which are subjects of great importance to those contemplating or already engaged in handling stock of any kind. For being well educated in this line, as well as any other, we can often save serious mistakes.

If a man empties his purse into his head no man can take it away from him An investment in knowledge always pays the best interest. — Franklin.

For the protection of the public, as well as the reputation of the author, this work will be sold by subscription, by responsible agents who deal directly with the publishers, and who will be furnished with the proper credentials. As none but men of character will be employed, persons buying can confidently rely upon the authenticity of the book published.

SHOOK'S STOCK REMEDY CO.,
COLUMBUS. O

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THE

ORIGIN AND DEVELOPMENT

OF

AMERICAN SWINE,

FROM 1609 TO 1887.

A TREATISE ON BREEDING, REARING AND FATTENING OF SWINE, WITH INFORMATION AS TO THE BEST METHODS OF BUTCHERING CUTTING AND CURING THE MEAT, TOGETHER WITH A REVIEW OF THE PREVAILING CAUSES OF THE VARIOUS DISEASES TO WHICH THEY ARE SUBJECT, AND THE MOST EFFECTIVE MODERN TREATMENT THEREOF.

CHAPTER I.

HISTORY OF SWINE IN EARLY DAYS.

THE FIRST IMPORTATION OF SWINE—THEIR CHARACTERISTICS—MODE OF LIVING AND THEIR HEALTH—HOW THEY BECAME BENEFACTORS—THEIR IMPROVEMENT AND HEALTH—THE GERM THEORY.

THE FIRST IMPORTATION OF SWINE.

THE first swine in America, according to history, were brought by Columbus in 1493, then by De Soto to Florida in 1538, and then in 1609 some were brought to Virginia, direct from England. The congeniality of the climate favoring the rapid increase, and from being so worthless that no one cared to possess or use them, in less than twenty years they had so increased about Jamestown as to be a public nuisance, and to have made it necessary to fence the settlement against them. Other lots of hogs were afterwards brought to the colonies from Europe, and later to the States. They were seldom bred with much care, and in some localities became almost as troublesome as they had been at Jamestown in 1627; for, as history goes to show, very strict laws were in force in a great many places as to killing them, as they were useful as food for the settlers, and also in riding the country of snakes and other poisonous reptiles.

As the tide of emigration moved westward, the hog went with it as one of the means of food supply in the new settlements. There is no record of those early times to show that civilization had as yet taken

hold of "His Lordship," the American hog, in any great degree. On the contrary, we find that, as of old, he often went wild when opportunities for doing so were offered him. As late as 1828, according to history, large numbers roamed the wild woods of Ohio and Indiana, far from all human dwellings, where they grew very fat upon the abundance of oak and beech mast, and in some parts, where great numbers were allowed to run almost wild about the settlements, a triangular yoke was placed around the neck, to keep them from breaking through the fences.

HOW THEY BECAME BENEFACTORS.

In the problem of subduing the great territories of unimproved lands west of the Allegheny Mountains, the hog was destined to become an important factor. The immense forests and heavy mast, the fertile valleys along the rivers and streams, and the broad, rich prairies of the uplands between, produced corn in the greatest abundance. One of the most ready means of disposing of these vast crops was the feeding of them to hogs and then driving them to market, and as late as the year 1840 they were gathered together in large droves from the forests and feed lots of Ohio and driven to Philadelphia, or packed and then shipped upon flat-boats to New Orleans. Efforts were made from time to time to improve the feeding capacity of the breed by the introduction of better feeding stock from the Eastern Hemisphere, chiefly from Europe, and the success of those efforts have been that we have exceeded the weight of the "old elm peeler" at one-half the age; but as to what effect this improvement has had upon the health and constitution of the hog, I will endeavor to show.

My object in repeating, in the way of an introduction, this often told story of when and how the hog was first introduced into America, and the way

he was raised and fattened in those days, is to once more recall to mind that for about three hundred and fifty years under such treatment, such a thing as hog disease was entirely unknown. It was only when we began to improve and civilize the hog that he became subject to all the ills and ailments known to civilization, and sickened and died. When they were allowed to roam at large over the wild wood and prairie, and develop more slowly, building up the bone and muscular system first, before being fed upon corn, disease of any kind was unknown to them.

BLOOD, CONFINEMENT, AND CORN.

It was only when the improvement of swine was begun, and after considerable progress in that line had been made, then by confining them, thus depriving them of the wild range and the roots and herbs that nature supplied and instinct taught them to hunt, without being supplied with any artificial substitute to take their place, and the constant exclusive feeding of corn from the time the pig will eat it until he is taken to market, that they became diseased. While none of us might be willing to go back to the old fashioned nog to once more have health among our swine, yet I wish to offer the suggestion that this alone should prove to any breeder or feeder of swine, that the way to raise them is as near like nature as possible, (for I believe the constant confinement of swine in any form, produces many of the ills to which hog flesh is heir). Corn may be the principal food, but along with it should be fed shorts, oats, oil-cake, milk or slops of any kind, vegetables, weeds or grass, and they should have plenty of exercise in the pure air, with "fresh water and clean mud." The first and the most important object to the breeder or feeder is the health and constitutional

vigor of his stock, and in the way I have indicated, it can be best secured.

It is of the utmost importance to successful swine breeding and fattening, that attention should be given to the development of growth as well as fat. It is of so much importance and yet it is so largely neglected, that we deem it prudent to refer to it frequently. The swine of this country have been greatly injured by our very prevalent system of feeding by the crowding and forcing process to which they have long been subjected.

THE GERM THEORY.

If the very generally accepted theory of disease is correct, such a course can but result in making the hog an easy prey to disease. The parasitic or germ theory depends upon the system, human or animal, being vulnerable to the attacks of the parasites or germs. If the system is perfectly strong in every part, disease cannot find a lodgment in it. In general, parasites do not seek a particular organ because they prefer that organ, but because it is weak enough to allow their depredations. There is no part of the skin that they would not attack, if it were vulnerable, and the blood was in such condition as to favor their depredations. But the skin is able to resist, and hence they seek the weaker membranes and muscular tissues. It is, perhaps, impossible for us to keep our animals or ourselves in such strict accordance with the laws of nature as to prevent sickness, and hence disease and death from disease are in the world and are more or less active. But we can and should live up to the knowledge that we have. We know that if a child's bones are weak, it may not only lead to deformity, but that the child is not vigorous. This is just as true with the animal, though it may not show it as plainly as would the child. If a hog has never been furnished with material with which to build up

its bony and muscular system, it is practically in a diseased condition all the time. If the same state of affairs existed with an animal of less vigorous digestion, it would go to pieces and become a wreck at once. But the hog's digestive apparatus will often keep working very successfully, while its system is a perfect bubble, ready to collapse at any moment. But no one should be surprised to find any or all of the organs of such a hog refusing to perform their offices at any time. Hence such an animal is constantly exposed to disease. Cholera, in some of its forms, breaks out in a herd and sweeps through the community, and in most cases the learned veterinarian, or those whose services are sought, attributes the difficulty, in all probability, at once to uncleanly surroundings. But, as we have frequently had occasion to know, he is astonished when he arrives at the farm where the disease exists, to find everything as neat as a pin, and is dumfounded, and knows not to what cause to attribute the disease. As said before, our hogs, or other animals, may live in violation of the laws of nature, without our knowledge, and hence sicken or die under apparently the most intelligent treatment. But there can be no question at all that in the vast majority of cases in which the cholera appears, where the surroundings are cleanly, the cause is too much corn and a constant unequal development of the system. Our unlimited supply of corn in this country has not been an unmixed blessing. It is so plentiful with us that we feed it in ruinous excess, even when we are not prompted to make a hog before the animal has ceased to be a pig, and there are millions of dollars lost every year through the sickness and death of animals that have been stuffed with this comparatively unnourishing, but fat producing and heat creating food. Fat, except in limited quan-

tities, is not growth or an element of strength. It is a disease — unquestionably a disease — because it is wholly useless, and not only that, but a burden. Whatever is useless in the economy of nature, is at variance with nature, and excessive fat is as useless as a wen on an animal, so far as the needs of the system go.

Now, the constant exclusive feeding of corn from the time the pig will eat it until it is taken to the market, under our very bad system — as we think — of fattening hogs the first year, is a direct effort to create a diseased condition. It makes fat and nothing else. The bones and the muscles are not nourished, and they cannot be forced to maturity, except to a limited extent. They may be said to be forced when the animal is fed all the bone and muscle forming food that it will assimilate, as distinguished from starving it, but there must be time allowed it for full development. The process cannot be hastened, except in a limited degree. But we can force fat whenever we wish to. We can fatten the pig, or fatten the hog, but in doing so, we should not neglect to furnish the animal with an artificial antidote which nature requires, to overcome the evil effects of this crowding process. The formula for the Swine Tonic Powder, as given with this book, contains the medical properties to fulfill the desired purpose.

CHAPTER II.

IMPROVED SWINE.

THE FIRST IMPROVEMENT OF SWINE—NAMES OF THE DIFFERENT BREEDS—THEIR CHARACTERISTICS—THE CHINESE HOG—HIS EFFECTS UPON OTHER BREEDS—WHAT BREED OF HOGS TO USE.

THE FIRST IMPROVEMENT OF SWINE.

IN the early history of swine-breeding in the Miami Valley in Ohio (for it was here, beyond doubt, that the greatest efforts were made to improve our swine), it is clear from the best authority that there were two breeds, the Russia and the Byfield.

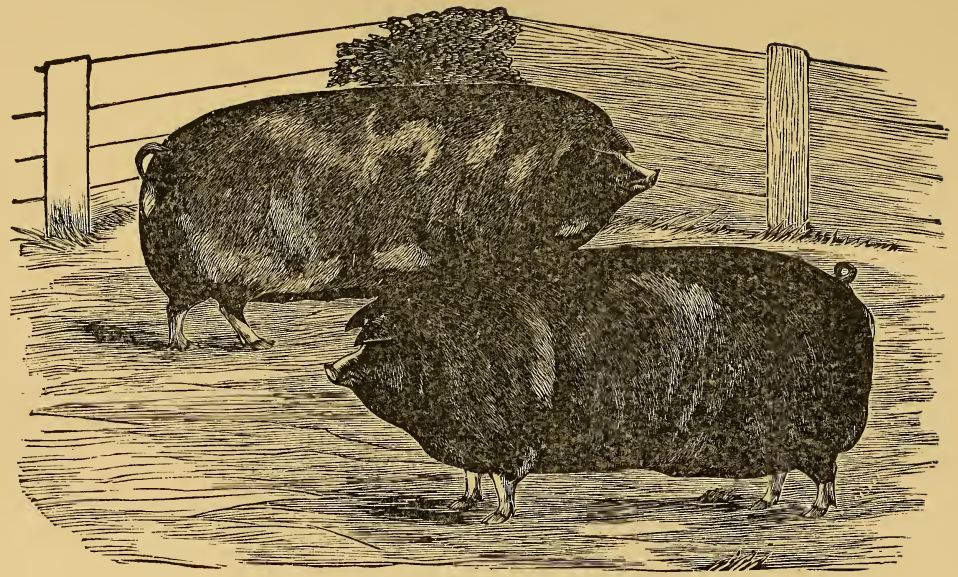
In 1816, the Shakers, of Union Village, Warren County, Ohio, purchased at Philadelphia, Pa., one boar and three sows, pure China, called big China hogs. The Shakers and other judicious breeders of Warren and Butler counties continued to use the breeds at command, and produced by repeated crosses a hog of exceedingly fine qualities for that period, known as the Warren County hog. This condition of the breeds continued until some time between 1835 and 1840, when the Berkshires and Irish Graziers were introduced. Some claim that the Berkshires were introduced first, and others the Irish Graziers. But let that be as it will, positive proof shows that these two breeds of hogs were crossed upon the hogs already produced by the cross of the China, Russia, and Byfield.

This crossing of breeds continued for some time, until the breeders of swine in the Miami Valley settled

down to the conviction that the basis of a good breed of hogs had been established, and stimulated by their success, they have aimed to improve what they have been so successful in forming. All defective points or qualities have, as far as possible, been corrected or improved by care. Thus we have a breed thoroughly established, which can be relied upon for the production of like qualities and character in progeny. This breed of swine was formerly known as the Magie, or Butler County hog — having derived that name from David Magie, of Butler County, Ohio, who was one of the leading men in introducing this hog into the heavy feeding districts of the world — but was afterward named by the Swine Breeders' Association, Poland-China. The best specimens of this improved breed, Poland-China, have good length, short, broad backs, straight on both lines, deep sides, very broad, full square hams and shoulders, drooping ears, short heads, slightly dish-faced, broad between the eyes, with a good coat of hair, and are of a dark, or spotted color. They are hardy, vigorous, and prolific. Their chief excellencies consist in their quiet disposition, and their susceptibility of being well fattened at any age, large growth when desirable, and a great amount of flesh laid on in proportion to the food consumed. They sometimes dress three hundred and fifty pounds when no older than ten months, and if kept until two or three years old, will often dress from six to nine hundred pounds; as a machine to turn corn into pork they have but few equals.

THE CHESTER WHITE.

The Chester White is a native of Chester County, Pennsylvania, where the breed originated. The first improvement in that county, according to history, was an introduction of a pair of white pigs from Bedfordshire, England, about 1820. They were crossed with



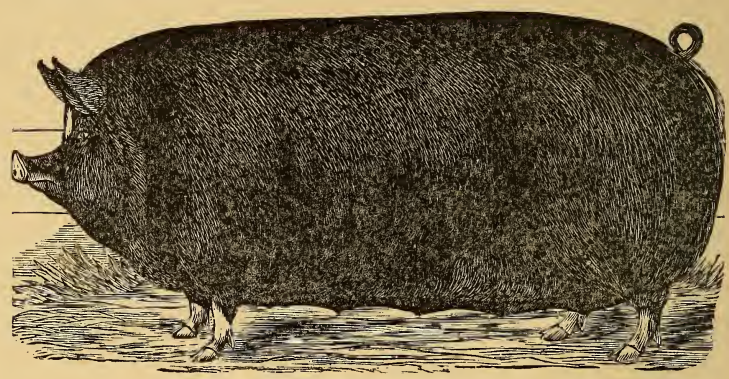
MAGIE HOGS.

the common breeds of the locality, and by careful breeding and selections of the best progeny, and judicious crossing to improve points, the well formed, large, easily fattened, and pure white hog, known as the Chester White, has resulted. All hogs called Chester Whites are not of that breed. There are other characteristics besides color to be estimated in the true type. Some object to this breed as being too coarse in bone and texture of flesh; but if they are of the true improved type, they are no coarser in bone or flesh than the other large breeds, and at any age obtain as great or greater size. But owing to their being white, they have never become as popular as the darker breeds; but this prejudice is fast disappearing, and they are becoming more popular. Of all breeds of swine, they are the most prolific breeders and best sucklers, and as now bred are splendid feeders. When crossed with any other breed of hogs the results are good, and there is no other breed that marks their progeny better than the Chester White. Owing to this, many spurious animals have been sold for breeding purposes that were not purely bred.

THE DUROCK, OR JERSEY RED.

According to history, the origin of this breed is not positively known, they having been bred in England as well as this country for a great many years. In England they are known as the Tamworth hog, and in some parts of America as the red Berkshire; but having been bred in New Jersey for more than fifty years, that is claimed as their home, and from this they received the name, Jersey Reds. But in 1884 they were named Durocks. They vary in color from a dark to a sandy red, and like the Poland-China, are docile and easily kept fat at any age, and in general make-up resemble that hog very much. The ear has been the most objectionable feature, being very large; but

judicious breeding has refined them in this and some other respects, and they now are considered one of the best grazing and feeding breeds in the world, and always bring the top price in the pork market. They are prolific and hardy, with the best constitution, and when matured become very heavy, often weighing from six hundred to one thousand pounds; but their average weight, at any age, is about that of the Poland-China, or Chester White.



THE BERKSHIRE.

The earliest account we have of the Berkshire hog is, that is he is believed to have sprung from the old or native English hog, and the county of Berks, in the south of England, is credited as his home. Here he has been known from time immemorial. Here he underwent those changes in form and feeding capacity, that the Poland-China, Chester White, and other improved breeds did in their native homes; and from here he went forth to other parts of the United Kingdom, and throughout the civilized world. The high estimation in which he is held is shown by the frequent mention of his use as a means of improving other swine. He is credited with being used to improve almost every popular breed of swine known. This has been a fashionable breed for farmers of this country, there having been much speculative fever in

the past, and a great many, imported and native-bred, have been sold throughout America at fabulous prices. The color is black, with white on feet, face, tip of tail, and an occasional splash of white on arm; a small spot of white on any other portion of the body is not accepted as evidence of impurity of blood, yet the color is generally uniform and markings the same. He is dish-faced, with small neat head, short neck, thin, erect ears, broad, short back, deep sides and well rounded hams, small bone, but strong, and of the best quality. He is very thin-haired, but a breed of great muscular power and vitality, with strong digestive powers, very hardy, a quick maturer, and when ten or twelve months old, usually weighs about three hundred pounds. As a rustler he has but few equals, and is therefore an economical breed to turn the produce of the farm into marketable flesh. The pigs are smart and active at birth, fatten readily at any age, and produce the finest quality of pork. They are not so large as the Poland-China, Chester White, or Durock, but are superior to them in quality of flesh, it being finer and better marbled, and the best meat for home use.

THE VICTORIA.

This breed of swine was originated in Lake County, Indiana, by Mr. Geo. F. Davis, and was formed by the crossing of four distinct breeds of hogs, viz.: Poland-China, Chester White, Berkshire, and Suffolk. They are very fine of bone and quality, and are good hogs for crossing on the large breeds, as they possess great power of transmitting their color and fine quality, when bred to other breeds. They are white in color, with occasional dark spots in the skin, and have a good coat of hair; stand very firm on their feet and have an excellent constitution. They have small, neat heads, dish-face, thin ears, short legs, broad, straight backs, strong bone, deep sides, and excellent hams. The

quality of their meat cannot be surpassed, even by the Berkshire or Essex. They are as hardy as any of the black breeds, good grazers, quick maturers, and fatten readily at any age. When twelve or fourteen months old they will weigh three hundred and fifty or four hundred pounds. They are prolific, and good sucklers and mothers, and the pigs are very hardy.

THE YORKSHIRE.

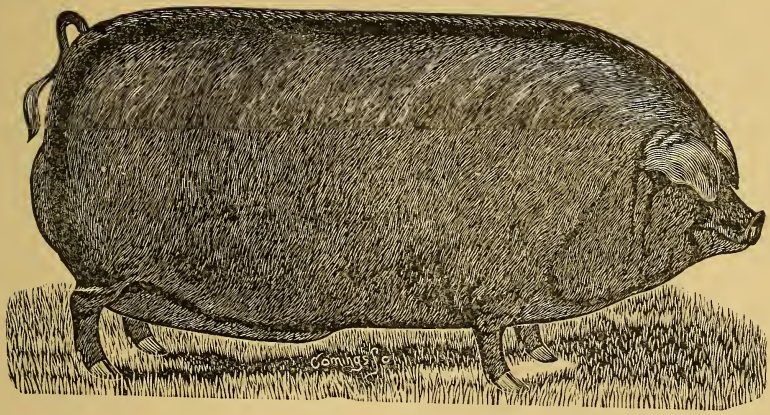
Like the Berkshire, is a foreign breed, but not so prevalent in this country as other breeds. They are white with a good coat of hair, firm skin, and hardy constitution. They are of good length, with short legs, and very dish-faced, positive in their crossings, are prolific breeders, and fatten readily, and no doubt it would be an improvement to have more of them introduced in most parts of America.

THE SUFFOLK.

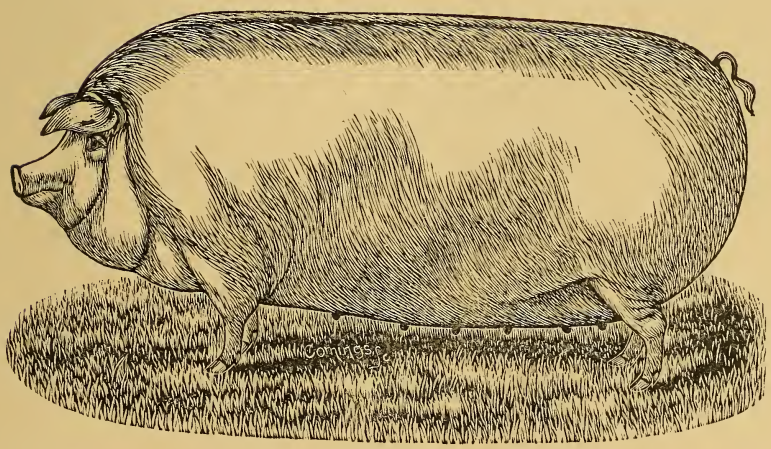
This breed is not so great a favorite with the farmer, nor so frequently met with. Popular opinion is, that they are delicate in constitution, and not so valuable to cross with other breeds. They are small, thin-haired, with tender skin, but this may be the result of errors in breeding, and might be obviated, as has been done, with other more popular breeds. They are a quiet hog, and fatten very readily. For a hog for the small farmer, gardener, or mechanic to fatten for their own use, they have no superior. Any one contemplating buying this breed of hogs for breeding purposes should use some care, as they are scarcer than most breeds in their pure state.

THE ESSEX.

The Essex hog, like the Berkshire, is of English blood, and its general characteristics are about the same. In color it is black, without any white markings, and is heavy-haired. It is smaller, and this has



DUROCK OR JERSEY RED.



IMPROVED CHESTER WHITE.

prevented its general introduction, as the American farmer demands a larger machine, in the form of a hog, to consume his corn. The flesh of the Essex, like the Berkshire, is well marbled, the lean and fat being intermixed, and of the most excellent quality. The sows are good sucklers, but the pigs are delicate in infancy, and must have good attention for a few days to prevent loss, or at least such is the general opinion.

THE CHINESE HOG.

No influence, aside from those of selection and nutrition, has been so powerful in effecting improvement in our breeds of swine as that of the infusion of the blood of the Chinese variety. In fact it is, perhaps, not claiming too much for the influence of this cross to assert, that it has formed the basis for all our modern improved breeds of swine. Its influence has transformed the long-legged, elephantine-eared, coarse-boned, gigantic hog of old England into the heavy-jowled, short-legged, compact, early maturing Berkshire, Essex, Poland-China, Small Yorkshire, and Suffolk of to-day. Almost every litter dropped from sows of any of our improved breeds contains a living witness to the prepotency of this blood, in the shape of one or more members of the family that shows a decided tendency to revert to the original Chinese type.

How long the Chinese hog has held the type which, since our knowledge of the domestic animals of that country began, we know he has retained without any preceptible modification, is, and always will continue to be, a matter of mere conjecture. Its civilization, such as it is, is older than that of any other country of which we have any knowledge, and it is quite likely that its breed of swine ante-dates, in its origin, that of any other race of domestic animals known to Europe or America.

The distinguished characteristic of the Chinese hog is the facility with which he converts everything he eats into fat. From the time he is a week old, until the day of his death, the Chinese pig or hog is fat. If kept in the same pen with others, even of our best varieties, and with feed barely sufficient to sustain life in them, the Chinese pig is fat; and when slaughtered, no matter at what age, the butcher finds him a mass of fat.

The early workers for the improvement of the swine of the British Islands were not slow in discovering the vast superiority of the Chinese hog in this respect over their own native breeds, and the cross was early resorted to and extensively used. The purely-bred, or imported China hogs, were found to be ill adapted to the climate of the British Islands or the United States, and their flesh was not prized because of the superabundance of fat; but improvement, effected by crossing them upon the coarser breeds of England, made them marketable, and none of the various foreign crosses introduced by English breeders have left so marked an impress upon the stock of that country.

The shape of the Chinese hog is peculiar; the body is long; legs short, back long and swaying toward the center, the belly nearly touching the ground; jowls very heavy; ears rather small, standing out from the head, but not drooping; head and nose short, and very broad between the eyes; neck short; color white or black, or a mixture of both, but usually the white predominating. As before remarked, every breeder of improved swine may occasionally see among any of the modern breed, no matter how purely bred, specimens that very nearly approach the Chinese type—and which, from the very earliest days of their pighood, manifest the characteristic tendency of their

Chinese ancestry to become fat, no matter how they may be kept—a silent but constant attestation of the influence of the Chinese blood coming down through many generations, but ever tending to re-assert itself, and revert to its original type.

WHAT BREED OF HOGS TO USE.

In deciding this question every person must be governed by the location. There is no one breed of hogs adapted to all sections of the country or situations. The diversity of crops and methods of feeding make this more noticeable, and as long as we overlook the facts, the more will we attempt to discover a better animal than those we have, which, fortunately, is not necessary. In the East, where the hog is given the range of a pasture, or in the South, where the forests are used for ranges, and corn is scarcer and higher than in the West, the smaller improved breeds, such as the Berkshire, Essex, Yorkshire, or Suffolk, would most likely prove the most valuable, as they are quick maturers and do not require so much feed. But in the West the system is somewhat different, for the hog is used as a means of converting the products of the farm into produce that is more profitable and easier transported.

CORN THE MAIN CROP.

In some sections corn is the great staple to the exclusion of all other crops, and it is often the case that it can not be grown profitably, and sold in that shape. What the Western farmer most desires, is a hog that is hardy; that grows to a large size; that is easily fattened at any age, and is adapted to the climate, for his object is to feed his corn and sell the pork. For this purpose the larger breeds, such as the Poland-China, Durock, Chester White, Victoria, or Berkshire, are the best adapted. There is not a great deal of difference now in the different breeds, except in the single mat-

ter of color. All the breeders of the various sorts of swine have had the same points in view, and have bred to the same form until they have been brought to substantially the same thing, except, as I have said, in the matter of color. If a few white spots are put on the model Berkshire of to-day he will make a pretty fair Poland-China, barring the erect ears. If you take all the white hairs from him and give him black ones instead, he will be a good Essex pig; and if you change all his hair white, he will make a good Suffolk, Yorkshire, or Victoria. You can make any sort of a hog you want in five years of crossing and selection. Our breeders have all been coming toward one point for a long time, and consequently, they have all substantially reached about the same place.

CHAPTER III.

SWINE BREEDING.

SWINE BREEDING A SCIENCE—HOW TO SELECT BREEDERS—SELECTING SOWS—THE BOAR AND HIS CARE—THE TIME TO BREED—EXCEPTIONS TO THE RULE—CUSTOM AMONG HEAVY BREEDERS—ONE LITTER A YEAR BETTER THAN TWO—FALL PIGS AND HOW TO WINTER THEM—MIXED HUSBANDRY.

SWINE BREEDING A SCIENCE.

AT the present age the breeding of swine, like the breeding of all other domestic animals, has become a science, and for various reasons it is not every person that can make it a success. The first element of success is a love for the business. There is no instruction or rule of any kind that can be given which every one can or will follow; but for the benefit of those who may wish to learn from the experience of others, I will endeavor to give a few plain points which I have gathered by experience and observation, showing how to select breeders, to raise the best feeders, and to avoid diseases of all kinds to a great extent.

To be successful in raising swine, there are several points on which the breeder should be very particular when selecting the stock from which his future herd and profits are to come, as a mistake at that juncture may deprive him of all chances of success, and eventually drive him out of the business in poverty and disgust.

The first and most essential thing to be considered, is the health and thrift of swine; therefore, in order to

secure this, we must first look to the breeding animals. We should breed only from well-bred, well-matured, thrifty, healthy stock, remembering that like begets like, and if the good qualities are transmitted, the evil ones are sure to be.

SELECTING SOWS.

In the selection of sows it will depend entirely upon what is expected of them. If it is desired to produce hogs for pork, instead of to sell for breeding purposes, it is neither necessary nor desirable that the sows be of any pure breed; but they should be good animals individually, and be known to be from good ancestors on both sides, about whose health, vigor, growthiness, and prolificacy there has been no question. Always select the largest, most growthy, and best sow for breeders. The main points are length, depth, and bone. They should be animals which, when well grown, will be of good size; big enough and roomy enough to hold and develop within themselves a reasonable litter of lusty, well-formed pigs. As to bone, it is not the size, so much as the quality, that is wanted. A good, clean, bony leg, with a hog, as well as with any other animal, is far better than a fleshy one. In selecting either sows or boars, notice closely whether they show a tendency to weakness in the ankles and feet. Some hogs stand up squarely on their feet, while others are extremely faulty in this respect, and sometimes before half grown are so broken down that they get about with great difficulty, and when fat and heavy can not stand up long enough to walk a short distance, and, consequently, have to be provided with conveyance whenever they are ready to be taken off the farm. "The model hog of any kind should not be so modeled that, when fat, its legs will not carry it to market, let that be one mile or fifty."

Breeding from stock too young is not only injurious, but dangerous; before breeding, sows should be at least eight or nine months old. A great many breeders prefer to have them older, upon the theory that if bred too young it retards their growth, as they never develop as well as when bred older. Their true value as breeders can not well be known until they have been bred two or three times; then they will be in their prime, and the best can be retained for still further and better service, and the unprofitable ones sent to fulfill their destiny.

Among all breeds of swine there are families that are shy breeders, have small litters and give but little milk. Such should be shunned, as they are a source of much aggravation and profanity. While some sows have from twelve to sixteen pigs, I never saw one that could give anything near enough milk for that number after they were a few days old, and I have come to the conclusion that a sow that has and raises well from seven to ten pigs, three times in two years, is a prize to her owner which he can afford to cherish and nourish abundantly. Occasionally one does a little better, and a great many do as well, but millions fall far short of it.

The age to which sows can be kept profitably depends upon how valuable they may be. Most breeders prefer to put them off the third or fourth year, as then they are liable to become very heavy and sometimes feeble or treacherous; and unless very valuable they had better be fed off, and replaced with good young ones, for the following reasons: First, an old and feeble sow will not raise any more nor any better pigs than a good young sow will, and if she is treacherous in any way, her progeny is liable to inherit it. Second, when her pigs are weaned, in a great many cases, she cannot be bred to have pigs again, at the proper time,

much sooner than one of her daughters; and then the risk and expense of keeping her are so much greater.

THE BOAR.

As so much depends upon the male, at the head of a herd, great care should be taken in selecting a boar. As the labor of a lifetime, or the expense of a great deal of money and time in getting together a herd of good sows may be vitiated by a week's use of an inferior boar, it is important that he should not be selected at random. He should be purely bred of whatever stock the party prefers, and not only a first-class individual himself, but have a pedigree showing unmistakably that his parents, grand-parents, and great-grand-parents were of the same character. The pedigree is simply a certificate of character, and unless it shows good character it is of no practical value. It should back up the pig, but if the pig fails to back up the pedigree as well, there is probably something wrong in one or the other. "Hands off" would, in that case, be good advice. He should be a healthy, robust fellow, and of such form that, when fat, he would be about the model of such hogs as it is desired to raise. The generally accepted idea among experienced breeders is, that the male should be somewhat more blocky and compact than the female, on the theory that the offsprings in outward form resemble the sire more than the dam. The boar should be medium in length, of great width and depth, back straight and strong, legs the same, but not too heavily boned, and should stand up well on his toes; neck and head short, dish-faced, ears, hair, and tail fine, features masculine, hams deep and well turned, ribs well sprung, being good in the shoulder and girth, as that denotes vigor and constitution (color is of the least importance). When wanted for service he should be at least from eight to ten months old. How long he should be kept for service, as in the sow,

depends upon his value as a breeder. He would have to be at least two years old before anything could be determined. If then he begins to prove a valuable sire, he should be kept as long as possible, which, with good care, may be until he is five years old, or longer if he still retains his health and vigor.

HOW THE ENGLISH JUDGE PIGS.

The following dialogue, which occurred at a recent English exhibition of stock, will perhaps illustrate some of the points which should be looked for in a good pig for breeding purposes, and also show how differently an old hand and an amateur set to work. The first class is that for young boars, of which there were seven. After they were let out of the pen for inspection it was remarked by

A. Some fine young boars here, especially that one with the beautifully turned-up short snout, wide shoulders, thin coat, and delicate skin.

B. Do you think so? It is not quite my style of animal; I like one with a nose of fair length, the lower jaw sprung or bent (not straight), head wide between the ears, a small, keen eye, muscular neck, shoulders slightly upright, but not open or splayed on the top, ribs well sprung, deep in flanks for and aft, loin wide, hips well apart, hind-quarters long and deep, all covered with a fair quantity of not too fine hair and skin, and placed on legs well outside the body. You are then certain to get masculine character and good constitution, as well as the largest weights of meat where it is worth most per pound.

A. Yes! but look at the beautiful head and quality of the further pig.

B. I admit that your favorite does appear to have what sometimes goes by the name of quality, i. e., fine hair, thin skin, and delicacy of appearance generally; this is to me a proof of effeminacy in a male animal.

The young boar you admire, as well as one or two others in the class, has no muscle or lean meat, and no middle; he is slack in the loin, and the fore-legs are either bent or both appear to come out of the same place; the tail is also set low on a light ham.

A. I must frankly say that these boars are not so good behind and through the middle as they should be, but I am told the most difficult point to obtain in show pigs is a good head.

B. But what earthly use is a head such as you require when it is nearly always accompanied by a light neck and hind-quarters. The end of all breeding pigs and their produce is the slaughter-house, and, to judge a pig properly, you must first ask yourself or a bacon-curer which part of the pig's carcass is the most valuable. My simple plan is to divide the carcass into three nearly equal portions. Take the head to the shoulder, the shoulder to the hip, and the hip to the tail, and the pig with the best middle and hind-quarters is far the most valuable. Thus, for argument, a dead pig is worth 56s. per cwt., or 6d. per lb. No. 1 part, or that with the head, will be worth to a bacon-curer 4d. per lb.; and the second part, the hind-quarter, at 8d. per lb.; and the middle, or third part, would be valued at 6d. per lb. These little facts I always keep in mind when acting as judge of pigs. Of course, I do not ignore the useful points which fanciers assert the various breeds should possess, but I try very hard to get the utility points as well, which include in a boar every appearance of being useful as a sire, and with sows that all of them above fifteen months old have not only bred pigs but reared them. This latter is especially necessary, as many of the sows whose lives are spent in the forcing and show-yard pens are useless as brood sows.

Rule: A male hog should be vigorous and compact, void of any extremely coarse or delicate points, sows more coarse and roomy, and both of a kind disposition. This rule will hold good in any breed of hogs, and when breeding for any purpose, either breeders or feeders. To take this advice, and some more with it, I would still say, "never select, of either sex, the chubby pig of a small litter from a small sow reared in a small pen for a breeder. It is betting against success, and giving luck the biggest kind of odds.

BREEDING TIME.

The time to breed sows, so as to have them farrow at the most profitable time, is a question that has to be governed altogether by circumstances. The general rule is, that December is the best month to breed in, then the pigs will come in April, or about the time of new grass. This is considered the best time for the general crop of pigs to come, so that the sows after weaning their pigs, can have the summer and fall in which to regain their strength and vigor before bred for the next year, unless rebred soon again for a fall litter, which is not always considered best.

There are exceptions, of course, to this rule. First: The location will have to be considered; in some localities pigs farrowed in February or March would do as well as if farrowed in May in other localities. It is thought best not to have them come so early, as they are liable to be lost or stunted by the cold before they have learned to eat well, or can have the benefit of new grass. Second: If pigs are designed especially for exhibition, the time for them to come should be governed by the date of the show, and the age required by the premium list. Third: In feeding for some particular market, the time to reach it must be considered

in connection with the facilities likely to be at hand for keeping and feeding for the purpose in view.

IN THE HEAVY FEEDING DISTRICTS.

In the heavy hog feeding districts many breeders of large experience, are satisfied to get one good litter a year from each sow, for, by this means, they can have them come in April or May, and by good care, turn them off in December, weighing two hundred and fifty pounds or more. This they consider the most profitable way of feeding, as hogs, up to that age and weight, take on pounds much faster than they do after that time, and then the risks are so much less. In feeding off these young hogs, very often their dams are fed off with them, especially the old or inferior breeders, and some choice young sows are retained in their place, which is a good plan to adopt at all times, as it saves carrying over any unprofitable sows; but the plan of selecting all young sows for breeders every year, as adopted by some, I do not approve of, as it degenerates the stock.

ONE LITTER A YEAR BETTER THAN TWO.

Many breeders of large experience in raising pigs are satisfied to get one good litter a year from each sow. A first-rate litter, strong and thrifty, is considered more profitable than two of second-rate quality. This is assuming that by the two-litter plan the pigs are necessarily inferior, and there is good reason for supposing this to be the fact.

If a sow produces two litters each year it follows that during two-thirds of the time the energies of her system are directed to the growth of these litters before farrowing. This leaves only four months of the year in which to suckle the two litters; or only the length of time usually allowed for one. It sometimes happens that sows are bred soon after they have far-

rowed and are thus required to carry one litter while suckling another, but this always results in the diminished thrift and value of one litter or the other, and often in the injury of both, as well as of the sow herself.

If two litters are to be had within the year, the spring litter will come so early that the little pigs are liable to be lost or stunted by the cold before they have learned to feed well, or can have the benefit of new grass. The fall litter, necessarily coming late, will also suffer from the cold of early winter after they are weaned. Even with the best care the growth of fall pigs is retarded by the cold weather and their being compelled to rely on dry feed at an age when the addition of grass and clover to their diet is so much needed for their best development.

Good shelter and regular attendance, with generous feeding, will go far toward keeping them in a thrifty condition; but this adds to the cost of rearing, and is made to count against fall litters, except under special circumstances or conditions which may at times make it profitable to rear fall or winter pigs.

By the two-litter plan the sow does not have the needed time in which to recover fully from that wear and tear on her system which is inseparable from the proper rearing by her of a litter of healthy, fast-growing pigs.

There are cases in which it is advisable or unavoidable that sows farrow at some other season than from about the first of March to the middle of April, or about the time of new grass; but as a rule the general crop of young pigs should come at this time, so that the sows, after weaning their pigs, can have the summer and fall in which to regain their strength and vigor before being bred for the next year.

EXCEPTIONS TO THE GENERAL RULE.

If pigs are designed specially for exhibition, the time for them to come should be governed by the date of the show and the age required by the premium list.

Whether to be fed for sale to the local butcher or for shipment to the great pork-packing centers, the particular market to be reached must be considered in connection with the facilities likely to be at hand for keeping and feeding for the purpose had in view.

If it is intended to rear sow pigs to be retained or sold for breeding purposes, there can be no better time to have them come than in the spring, as recommended for the general crop. This gives them the whole summer on grass, and if with this they are allowed a little mill feed daily, made into swill, and after harvest turned on the wheat stubble, or fed on oats and rye, they will make the best possible growth, and be ready to receive the boar in January or February. They will then throw their first litters early in May or June following, or when they are a little over one year old. As it is not generally deemed advisable to save as breeders pigs from the first litter of a young sow, the fact that these May or June pigs the next year would be too young to be bred for spring pigs the next year would not be considered any disadvantage. And yet, if particularly well bred and valuable as breeding stock, they may be retained and served in time to drop their first litters in June or August, or when twelve to fourteen months old.

In the rearing of young boars for breeding purposes, it sometimes happens that there is a demand in the fall for boars that are nearly a year old. When such demand is likely to occur, it is well to provide for it by having a few litters of fall pigs. The extra expense of keeping them through the winter may be more than realized by the good prices they will com-

mand the following season. The chief demand, however, for young boars, is for those of very early spring litters. Here again some additional risk and care are required, but with well-bred stock which can be relied on to prove its good breeding the prices to be had for such young boars will justify the extra care given them.

A sow that is cross or bad to handle at farrowing time should be bred so as to have pigs in mild weather. When near her time she can be turned into a woods or other pasture and permitted to take care of herself. After her pigs are a few days old she will not be so cross, and if then approached with a little corn or other feed a few times she will soon become manageable, and can then be taken to the barn-yard, or where the other sows and their pigs are kept. We would not like to have many of the savage kind of sows to deal with, but it sometimes pays well to humor a sow, valuable for the stock that is in her, by keeping away from her at farrowing time. Having her pigs to come in mild weather is the surest way of having her save them, but even then it is generally a "hit and miss" case.

It is sometimes claimed that sows, in order to become good milkers, should be bred when quite young — say at six or eight months old — so that they may have their first litters at ten or twelve months of age. But oft-repeated trial does not support the claim. Improvement in this direction is best secured by the careful selection of breeding stock, and by feeding when young and growing, with a view to the development of milking qualities in the young sows.— Phil. Thrifton.

FALL PIGS AND HOW TO WINTER THEM.

"There are so many failures made in the wintering of small pigs that many farmers claim it does not pay to raise them. Now, if one of this large class would say 'It does not pay me to raise fall pigs,' I would not call his statement in question. The fault is in the man

and not in the pigs. The writer finds it profitable to raise enough fall pigs to have a car load of extra good hogs by the time they are twelve or fourteen months old. Simply because fall litters are not as easily kept, and are more liable to disease, as usually kept, than spring litters, does not settle the question of profits.

If the corn crop of the farm is sufficient to make one hundred good porkers, the risk of the business will be lessened by having about one-third of them come in the early fall and two-thirds in early spring. Every one knows that liability to disease increases as the numbers increase. Then, too, there are not needed on the farm so many pens and feeding floors. The risk of swine-raising has become so great within a few years, that we do well to use every precaution to prevent outbreaks of disease, as it is more easily prevented than controlled. We can keep the quarters clean and comfortable for forty, and have the grazing lots kept fresh and free from mud and bare places, where if, we had twice or three times that number, we would surely fail if caught in a wet, disagreeable spell of weather.

MAKE THEM COMFORTABLE.

Unless the farmer plans to make the fall litters comfortable from November to May, when they should be ready to turn to clover, he will not likely make it pay to handle fall litters. Comfortable quarters and suitable food they must have.

The fall pigs which are to live on dry corn and ice-water from December to May will invite disease ; and I would be disappointed if by such keep a large per cent. did not die, and the survivors have coughs and a staring coat. If that is the keep the fall pigs must have, then I will agree that I want no fall pigs. But the day has come when we can not afford to raise any kind of hogs on dry corn and cold water. The men who limit their hogs and pigs to the corn and water

diet are the ones who experience heavy losses in the business. If we have learned anything about the management of swine, it is that the health of the heard must be the first consideration, and that can not be secured without due regard to sanitary law.

BEST FOR CLOVER.

The pigs which come in spring have not sufficiently strong digestion by the middle of May to go into the clover field and make profitable growth on clover alone, as have the pigs farrowed the September or October previous. The spring pigs, to be ready for market by the December or January following, must have grain every day, with the clover or grass to bring them to the butcher before the year closes. The fall pigs, if turned on clover in May, in good order, will make rapid growth until the clover becomes woody, in July or August. By this time or the first of September, the roasting ears are formed, and we begin to cut up the corn and feed stalk and all on the clover fields. The corn is green and is all eaten, if fed in moderation, until the stalks harden. The change from clover to grain is thus most gradual, and we find the pigs often ready for market by November, and to weigh over three hundred pounds at ten or twelve months, four months of which time they have had no grain. This period of clover feeding has greatly reduced the average monthly expense of keep, and has enabled us to convert clover into pork to an extent which would be impossible with that number of spring pigs.

OLD VIEW NOT CORRECT.

"But fall pigs don't do any good," I have often heard farmers say, and once thought an old farmer's opinion on that point was so valuable that it was hardly worth while to test its correctness by experiment. Having, however, tested the matter, I conclude that, with the dry corn and ice-water diet, and muddy feed lots, and

dirty, damp, cold beds, "fall pigs don't do any good." If, however, September pigs are provided with good sleeping quarters, with clean bedding, good ventilation, without the wind whistling through, they can sleep comfortably and find escape in the daytime from storm and chilling winds. Then, if instead of rooting and wading in the mud, belly deep, for their feed, they have a board or stone floor to eat on, they can eat with comfort. And if, in connection with this house and feeding floor, they can have the range of a grass lot they will spend hours here every day, unless it is very stormy, grazing.

NOT CORN ALONE.

Now, their feed must not be corn alone. With it and the grass lot they will do well if the winter is open, so they can every day get grass and plenty of exercise; but if the winter is a hard one, and they are shut from the grazing by snow or intense cold, they will soon show constipation and a feverish condition, and by March the chances are they will look rough and come out in the morning coughing; and it is a cough that none of the so-called remedies will cure so long as the corn and ice-water diet continues.

To avoid any check in growth by such deranged condition we had better meet the demands of nature. If instead of the rich carbonaceous diet we modify it by reducing the amount of corn and substituting bran and oil-cake meal we have a ration which will not provoke constipation and feverishness while the pigs are deprived of grass and exercise. But these are not enough. We want a less concentrated food. We get this cheaply by mixing corn meal, bran and oil-cake meal with clover hay run through the cutting-box. If the meal and mill feed be mixed with the chaffed clover and moistened and fed in a trough there will be no waste, and better pay for the feed consumed than in

any other way the writer has ever tried. It will insure more growth and better health than corn, or corn and bran, or mill feed, without the clover.

PLENTY OF DRINK AND GOOD.

But pigs will not do their best for us without plenty of drink. How to secure that long bothered me; for young pigs will not drink as much ice-cold slop or water as they need to keep them in good condition. A trough full of ice does not make any fat or bone.

KEEPING SLOP WARM.

A cheap device for keeping slop warm is: Take a coal-oil barrel, put it inside of a box and pack with cut straw or saw-dust. Have a lid to close down tight. An old coffee-sack or piece of blanket or carpet laid over the barrel before putting on the lid of the barrel and closing down the lid of the box, will keep in the heat.

A CASE OF COOKING THAT PAYS.

We make the barrel full of cooked feed. If kept covered it will keep warm until fed out. It is made as thick as mush or cream, and one bucket of the feed mixed with a bucket of water from the well makes a tepid mess which pigs enjoy, and will eat up clean, and go off happy to bed or to rambling about the grass lot. Here is a case where it pays well to cook feed for stock, and it is the only use of cooked feed the writer has ever found profitable.

With this jacket around the slop barrel the hot dish-water, and all waste hot water of the kitchen or laundry, can be utilized to the comfort and health of the pigs. The chill ought to be taken off of any drink given to the pigs in freezing weather if we would get best results for care and feed.

This device may seem small to the farmer who handles pigs and swine by the hundred, but as the

bulk of the pork of the country is made by the farmers who handle a few hogs, the hints here given will meet their case.

MIXED HUSBANDRY.

Now, here we have the experience of two prominent writers and breeders, one favoring one litter a year, coming in the spring, and the other favoring two litters a year. My experience and observations have been, that mixed husbandry in swine breeding, as well as mixed husbandry in farming, is the true method for the general farmer; therefore, I would be in favor of Mr. Bohman's system of breeding, and raise some pigs each fall instead of having them come in the spring. Of course they will need some attention, but there are few but what can give them all the attention they need, if they will.

The device to keep swill warm, as given by Mr. Bohman, is good, and where you have but a few pigs and do not want to use that, I have found it very convenient, at times, to fill a large iron pot with milk or good slops, evening and morning, and heat it on the cook-stove to boiling heat, in this stir bran or ground grain of any kind to give it a body, then cool it to blood heat. This will make feed enough for twenty or more pigs, and for which they will be very thankful, and prove it by their fine appearance. Those who have never tried this should try it once, and see how much better their pigs will do than if confined to dry corn and cold water. Give a sow and pigs, or a dozen pigs, a good, warm bucket of slop twice a day, and see how much faster they will gain than if compelled to drink ice-water, and eat dry, and probably frozen corn.

CHAPTER IV.

THE BOAR, BROOD SOWS, PIGS, AND HOW TO CARE FOR THEM.

THE BOAR AND HIS CARE—THE BROOD SOWS—WHEN TO PUT THEM UP—WHERE TO PUT THEM—WHEN TO FEED THEM—HOW THEY SHOULD BE FED—NOTES WORTH MENTIONING—TEACH YOUNG PIGS TO EAT—KEEP THEM FROM ROBBING EACH OTHER—TREATMENT OF SUCKLING PIGS—WEANING TIME—TIME TO CASTRATE PIGS—SAVE THE SOWS—THEIR CARE AFTER BEING WEANED—GOOD THINGS REPEATED.

THE BOAR — HIS CARE.

AS the boar is one-half the herd and he is expected to impress his qualities with surety on his progency, he should be kept quiet, and in a strong and healthy condition all the time. Knowing this, there is no place better to keep him than a good grass lot, well fenced, with shade and shelter, and away from other hogs. Here he will have a chance for exercising and grazing, and is not so liable to become restless and breachy. His food should be a mixture of mill feed and corn, or oats and corn, and in such quantity as will keep him in a nice thrifty condition, but not too fat, when wanted for service. He should be well supplied at all times with fresh water, and frequently with a mess of good slops, etc. When wanted for service, it is always best to turn the sows in the lot to him, as by this means he can be kept more quiet. Never turn but one in at a time, and only allow one service; this is considered as good as two or more, and the additional service only exhaust the hog. Then turn the

sow out and put her away where he cannot see her; by this means you will always have a good and quiet hog. There are two old customs that are practiced all over the country, that the owner of a good hog will find it to his advantage to abolish. First: Turning the boar out with a lot of brimming sows and letting him go. Second: Loaning him to everybody else for the same purpose.

BROOD SOWS.

A great many breeders of swine seem to think brood sows require but little attention when not suckling pigs. This is a mistake, for the health and thrift of the pigs depend entirely upon the health and thrift of the sows while caring for and suckling them; therefore, too much attention can not be given them. They should be in a healthy, thrifty condition when bred, and receive such attention after that as to keep them in a thriving condition. Their feed should be a mixture of corn, mill feed, oats, roots, etc., with plenty of exercise in a grass or wood lot. They should be kept separate from other stock, especially some six weeks before farrowing time, and provided with a clean, dry, warm place to sleep, so that they will not pile up and injure one another, for this is the cause of a great many pigs being lost at or before farrowing time, and can nearly always be avoided with a little care and attention.

WHEN TO PUT THEM UP.

Some two weeks before farrowing time, each sow should be put into suitable quarters (the season of the year being taken into consideration), so that she may become acquainted with the place before farrowing; if not, they are liable to become very restless. They should not have two much material furnished them, out of which to construct a nest, especially if in close quarters; but should be allowed to make their own

nest, as they can make it better than we can. Let them do as they please; worrying them makes them feverish and nervous. When I say too much bedding should not be furnished them, I do not mean an armful of straw is enough for a large sow to make a bed, especially in cold weather, but there is no need of her having an excessive amount of loose material when confined in small quarters. Their bed should be prepared in a place where it and its surrounding can be kept clean and dry. It should never be allowed to become wet, musty, or foul, and no dust should be allowed to accumulate, as dust on young pigs is very injurious to them, and a very small injury to young pigs may prevent a week's growth, as well as to insure disease. At all seasons they should have a shelter above them. If the weather is warm this is about all that is necessary. If in the winter or early spring, they should be sheltered from the wind and storms. There is not much danger of getting their quarters too warm. After giving birth the sow will be weak, circulation and all the vital functions reduced, and the bodily heat will be lowered in proportion. Nor will it be too warm for the pigs. Their mothers' body has been a warm home, and they fully realize that this is a cold and heartless world when first they make its acquaintance. At the critical hour leave the sow completely alone, and disturb her just as little as possible for a day or more.

WHEN TO FEED THEM.

Do not feed or slop her until she gets up and hunts for food or drink. She is weak and nervous, and very much afraid some one will hurt her babies. If one goes "poking their nose" around they will get her excited, and she will probably step or lay on some of her pigs. The best treatment that can be given her at this time is to leave her alone. One of the greatest troubles in raising pigs is, to prevent the sows from laying on

them and killing them. This is the reason why they should not be fed or disturbed until they get up in search of food. As long as they remain quiet and do not stir around, the pigs are safe, unless there is too much bedding, when a pig may get outside of the nest, and not being able or wise enough to get back again, it may perish from cold or hunger. But if disturbed or given food, the sow will certainly get up to eat it, or get excited, and then she will lie down again, and very likely on a pig or two. Whereas, this advice may not suit those who are engaged in the breeding of fine hogs, who may want to be present upon all occasions at the critical hour, to give the sow and pigs such assistance as they may need, and who, most always, have their sows so tame or kind that they will permit such attention, but most farmers will find that it will win "nine times out of ten." All a sow wants is a suitable place to farrow, and be let alone.

HOW THEY SHOULD BE FED.

From the time the sows are put up, their feed should be increased gradually, until up to a full feed, but should be of a loose and laxative kind. Milk, house-slops, bran, oil-meal, ground barley, rye or oats, and but little corn in any way, until the pigs are a week old. Corn is too heating, and is liable to cause fever and constipation, and is not as good to produce milk as other food. An abundance of milk for the first eight or ten weeks of the young pigs' existence is the best preparation they can have to fit them for profitable growth in after life. Therefore the sows should be supplied with a milk-producing food, regularly three times a day, all they will eat. How ever well she may be fed, if the pigs thrive ; ; they should, their capacity for taking all the milk will always excede the ability of the sow to furnish it, even when she is placed under the most favorable circumstances.

NOTES WORTH MENTIONING.

First: Great care should be taken in using slops from the house, not allowing vinegar, salty brine, or much sour buttermilk to be poured into the swill, as a pig is a delicate, tender animal when young, and great care should be taken that the food of the sow be sweet and sound. Any violent change of food given the sow, or her drinking sour or salty swills, will effect the pigs much more than the sow.

Second: Sometimes a sow refuses to own her pigs or let them suck, and if some means are not used to bring her to terms, the pigs will die for want of nourishment. The American stock book says: "The sow can be brought to terms by pouring a mixture of ten to twenty grains of spirits of camphor with one to three of tincture of opium into the ear. The sow will immediately lie down on the side of the ear to which the application was made, and remain quiet for several hours in this position without interfering with the pigs, and on recovery from the stupor will have lost her irritability in regard to them. The experiment has been tried in Germany hundreds of times, according to one of the agricultural journals, without any injurious effects." This may be worth trying, in order to save a good litter of pigs, but if she needed doctoring more than once for this reason, I would send her to the fattening pen as soon as possible. Some sows are "natural born fools," and the sooner they are gotten rid of the better.

Third: Occasionally sows loose part of their pigs from cold weather or some other cause, and it is necessary to put two litters together, in order to breed one of the sows again. This can be done very easily, when there is only two or three days' difference in their ages, and can often be done when there is a week's difference. Put the pigs in the nest with the sow, then

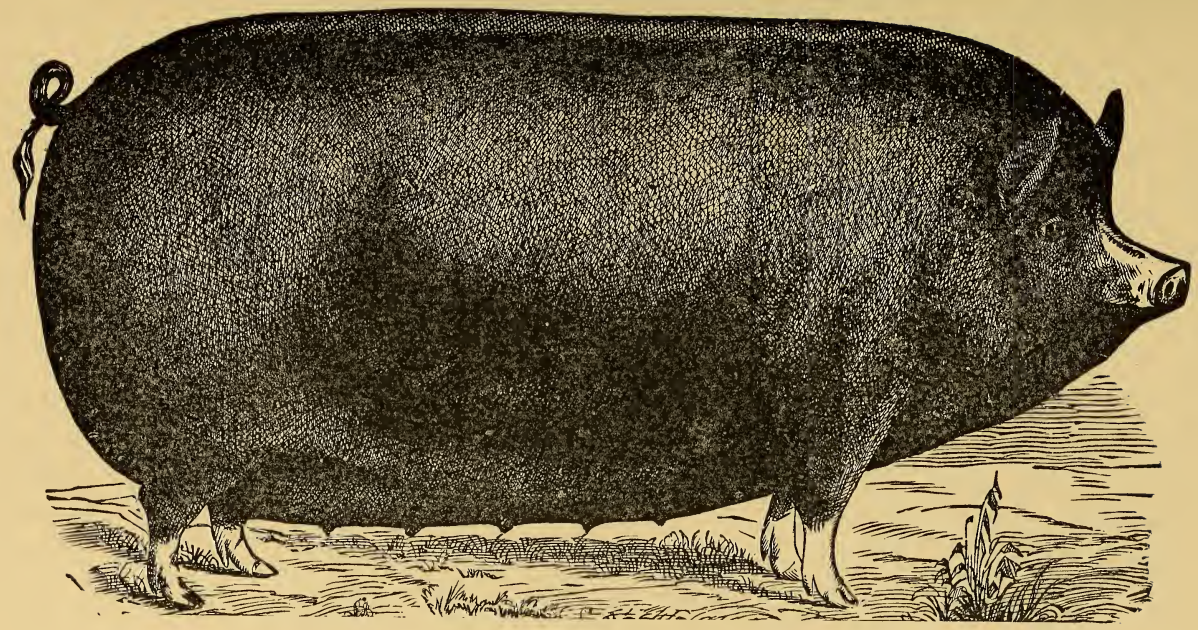
sprinkle her with warm water, with a small amount of whisky or coal-oil in it; let it run down off of her on the pigs, and she can not tell them apart. Their instinct for knowing their young is principally by the scent. Very often a sow can be made to own her own pigs in the same way.

TEACH THE YOUNG PIGS TO EAT.

It is always best to teach the young pigs to eat by themselves as soon as possible. This is all the more important if the sow happens to be bred again soon after farrowing. If then, they have been taught to depend largely on feed given them, instead of on the milk of the sow alone, they may safely be taken from the sow when they are eight weeks old. But if the sow has not been bred it will be much better to leave them suck until twelve or fourteen weeks old; or, in other words, until the sow weans them herself. When the pigs are about three or four weeks old, a small trough should be placed in some convenient place near the bed, where only the pigs can get at it, and it should be supplied regularly three times a day with some good, sweet feed. Sweet milk, good house-slop, midlings, oil-meal and boiled mashed potatoes make the best feed until they get older, when oats, rye, barley and corn can be added, which should be either ground or soaked, as it is easier digested. It is best not to feed too much at a time, but to feed often and regularly. Do not neglect the sows, but feed them regularly, and all they will eat until the pigs are weaned.

KEEP THE PIGS FROM ROBBING EACH OTHER.

One of the most important points in the management of sucking pigs is to prevent the robbing of young litters by those that are older. Unless timely and proper measures are taken, this is almost as certain to occur as that the appetites of young pigs will grow with the growth of the pigs themselves. As an easy



BERKSHIRE SOW.

way of satisfying this increasing appetite the older litters soon acquire the habit, if opportunity offers, of driving the younger from their dams and taking their milk themselves. Plundering and foraging are the first traits of lively character shown by young pigs. The present good is all they care for; and when litters of different ages are allowed to run together, no amount of extra feeding will prevent the older and stronger from taking the milk intended for the younger. The only way, therefore, to have all do well is to keep the litters apart while young. After they are five or six weeks old, if thriving well and following their dam with that earnest well-to-do and saucy air usual with hearty, good-feeding pigs, there is less danger of their being imposed upon by older ones. A litter of vigorous, high-feeling pigs will whip out in a moment any that would dare to intrude upon their rights as sucklers. The habit of robbing comes out by degrees, and, as a rule, it is only the younger litters, which have not yet begun to enjoy fully their happy lot in life, or such as have never been of strong and hearty growth, that are liable to suffer from the impositions of older comrades. The young and weak can not be expected to grow and do well unless protected in a way that will insure to them the milk of their dams. The separation of the litters will not only accomplish this, but will make it possible to keep the larger pigs from geting an undue share of any choice feed that may at times be had for distribution.

The keeping of the litters apart is some trouble, to be sure, but let any one try the experiment for a few weeks and he will find it time and care well invested. If, as they grow older and learn to eat by themselves, they are well and regularly fed, the owner will feel well repaid for the extra attention given by the increased growth and thrift of the little pigs. To the farmer's

boy, who likes fun, there is pay of another kind, viz., in the entertainment to be had from an occasional innocent and gallant little pig-fight. When two litters, after being kept in this way for a time, as strangers to each other, are brought together, by letting the older into the premises occupied by the younger, it will amuse almost any one to see the dust fly in the regular pitched battle which is sure to take place. One not used to seeing these encounters will be surprised also to find the smaller pigs the victors, unless the difference in weight is nearly as two to one against them, and then, when the fight is over, how proudly the little fellows stand on their ground while the big strangers scamper away. These little battles are not, of course, suggested as a necessary part of the rearing or training of the pigs, nor are they mentioned here to encourage the boys in this kind of sport. But, however they may occur, whether from accident or design, they show that young pigs, which have been well kept, are generally able to defend themselves.

TREATMENT OF SUCKING PIGS.

Sows with large litters begin to feel the tax made on them to furnish milk so frequently and abundantly as a healthy litter will demand at three to four weeks. By this time if she does not furnish them nourishment enough, the little fellows try to eat what they see the dam eat. Her food is not always of the kind best suited to their stomachs.

It may here be said that in all our management of the pig, our first aim should be not to injure the stomach or digestive powers. His value as a pork-producer depends solely on his power to assimilate food. He is the machine by which we wish to convert grass and grain into pork, and the value of the machine depends wholly on the amount of feed it can assimilate, or the amount of feed it can regularly digest each day. We

want to keep that stomach in condition to work every day, loose no time, and increase its daily capacity for work. We wish to treat the digestive apparatus of the pig rationally as we do our trotting colts. We begin to train them by degrees; give them light work, and be careful that their bone, tendon, or strengt his never overtaxed, yet all regularly exercised and strengthened. The law of physiology is, use strengthens, but disease weakens any of the animal functions. But like all nature's laws it is limited. When we overtax any member, weariness notifies us that we are near the limit of endurance. The young can not endure the long-continued effort of the more mature.

This power to digest is as important to develop in the pig as the power to trot in the colt. As the trotting quality can be bred into and developed in the colt so the power to digest and assimilate a large quantity of food has been bred into and can be developed in the pig. We can ruin the chances of the best bred and most promising colt by one month's or one week's over-training. So one week's over-feeding our young pig may ruin his chances of making as profitable a porker as he was capable of making with wise and judicious feeding.

The day has passed when farmers can afford to let the sow and pig shift for themselves. They have not the great forests and wood pastures, with abundance of mast, and tender juicy roots, and grubs, and tid-bits among the leaves to satisfy their hunger with; nor the cool shade, pure water from the spring and brook for drinking and bathing, and the abundant leaves for clean beds. Man has destroyed all these, and we must now anticipate the wants of the pig, which were, under the old regime, met in the woods. Then the sow and pigs could roam till the master wanted them for bacon, and if they grew slowly, they

were costing nothing for feed and care and he could afford to let them live until they were two or three years old. But now all this is changed. The hog must adapt himself to the civilized conditions, and the owner must provide everything for him, that they may live and help one another.

The owner who makes pork-raising profitable must meet the wants of that machine. As soon as the sow fails to furnish enough milk she must be fed to keep up the flow to her fullest capacity, and then this must be supplemented with something as near like it in digestibility and ability to form bone, fibre, force, and fat in a harmonious way. We must not feed that pig merely to make him fat. If we do we shall do it at the expense of bone and force, and we shall too late learn that our pigs fatten, but do not grow to meet our expectations. While the ability of a pig or steer to lay on fat is desirable and a thing to strive for, we must not have it in excess, or we soon reduce the size of our pigs to that of the Chinese.

Nor must we take the other extreme and compel the sow or pigs to root or die and compel them to pick up a living by constant labor and hunting. If we do we shall have a lean, long-legged, long-nosed, restless set of brutes that will never be still long enough to lay on flesh, but will spend all the feed consumed in furnishing force and not flesh We have a laboring animal and not a flesh producer The feed has been wasted. It must be evident that the matter of feeding and caring for the sow and pigs during the time of suckling will give character to the litter and decide largely what kind of hogs they are to make. The writer assumes that our greatest profit in producing pork and beef comes from early maturity, and he also believes that the greatest profit in pork production can not be reached without a generous and

watchful care of the sow and pigs before weaning.

As soon as the pigs begin to tax the sow they should have provided a side-table, where they can slip in and lunch often. At first it should consist of sweet milk, if this can be had, for it is the safest feed for pigs and calves. But where it can not be had we must approximate to it as closely as possible. The grain of wheat supplies the elements of growth of fibre, fat and bone, and we can furnish a slop made of middlings and oil-cake meal which is most easily digested, and which distends and strengthens the stomach. It is better than dry corn or corn-meal for sucking pigs. My own experience is that corn-meal alone is neither the most economical nor best suited for development of the pig. If it must be fed to young pigs, better results come by mixing it with cut clover, grass, bran, or oats.

The side-table for the pigs will need to be replenished often. If one is trying to make the most of his litter of pigs and keep them in good form, and hair and skin glowing with health, he will do well to feed five times a day, rather than two or three, though he gives no more feed in the five times than in the two or three. A small quantity of shelled corn soaked in pure water twelve to twenty-four hours, when pigs demand more than the sow can furnish, is a handy and useful ration. Corn and oats, half and half, ground fine, is an excellent food. But when we are feeding grain to pigs at three months old or under, we must take great care that they have a run to grass and that the grain rations are not so heavy as to make the pig too fat. He can most profitably be kept plump and thrifty, but not fat and lazy. Health is of first importance now.

WEANING TIME.

In order to wean the pigs some discretion and care should be used, as too sudden a change is not always good for either sows or pigs, especially if weaned at an early age. If the sows have been bred while suckling, which can be done the fifth day after farrowing, if so desired, or where they are expected to be bred soon again, the pigs can be weaned at six or eight weeks of age. Where this is expected, it is all the more necessary to teach the pigs to eat as soon as possible by giving them some milk and other feed in a trough by themselves, so that in weaning them the change is not so sudden. Put them in a pen, or what is better, a grass lot, and if where they can not see the sow, so much the better; then feed three times a day with every kind of sweet food; good mill feed, ground oats or barley, milk, etc., is what they want, and if the weather is cold do not forget to warm their feed. If necessary, turn the sow into them once a day for a few days, until her flow of milk is decreased. Continue to feed the pigs well, increasing their food as their ability increases to consume it. And as to age, there is no material difference between "pighood and hoghood," except to increase the amount and strength of the feed.

The mistake is often made of feeding young pigs on food that is purely fattening, which gives pigs a short dumpy form which can not be made to stretch out and grow into large thrifty hogs afterwards. If the little pigs are thus fed and crowded with fattening food in their early life they will grow into little round dumps of fat, with no substantial frame or foundation to back it. They will be stunted and show the effects of this kind of food ever afterward. This effect can be produced by confining pigs too closely and feeding corn in any form very heavily, or by the combinations

of fat-producing food, such as corn, oil-cake, sugar beets, etc. But where they are allowed plenty of range and a variety of food this effect is seldom produced.

If they are not intended to be fed right along, their feed, at any time or age, should not be checked or changed too suddenly, but fed once a day, and the amount gradually decreased until the change is made.

THE TIME TO CASTRATE PIGS.

All the pigs that are intended for feeders should be handled just before being weaned, as they do much better while young and following the sow than they do after they get older, and in case of death, caused by the operation, the loss is less. At six or eight weeks of age is considered the best time to handle them, and as to "signs," the weather should be clear and warm. If any of them are showing sickness, or the swine plague is raging in the neighborhood, I would say wait until they are well or the plague has abated, as investigation has shown that a hog with a wound or open sore will contract the disease quicker than one without.

SAVE THE SOWS.

I have made it a practice for several years, and observed others do the same, not to handle the female pigs for the following reasons: First—If they are to be fed off at a young age they will do fully as well open as if spayed, for they are not liable to brim very often, and if necessary, they can be bred four or six weeks before turning them off, and they will then gain in weight very fast. Second—When they are to be kept until a year or more old before being fattened they can just as well raise a litter of pigs as to run idle, and while they may not make quite as good growth in doing so, the pigs would more than offset the loss. Third—There, is with most breeders, an

unnecessary expense attached to the spaying of sows in procuring some competent person to do the work; and then the loss is always greater by death with sows than with male pigs. Furthermore, by leaving them go some very fine brood sows are obtained that would otherwise be lost. Here is a method to avoid spaying sows that is often practiced with good results: The first time a young sow brims take a smooth tin or glass tube some fourteen inches long, insert it, and run through it into the womb twenty No. 6 shot, which will prevent the brimming again. This is said to be just as good and far less dangerous than spaying, and can be done by any careful person.

THEIR CARE AFTER BEING WEANED.

As to the care of the pigs after being weaned, that will depend entirely on what is expected of them. If they are expected to be fed off at nine or ten months of age, and weigh two hundred and fifty or three hundred pounds, they will have to be fed some grain and swill, and kept all summer on grass. But as every farmer can not do this, it is very important that they should not be taken off of feed too sudden, and made to depend upon grass alone, especially where the grass is so poor that they can hardly find a living. Their feed should be gradually reduced, and continued for a few days after they are turned out, and then if they are not expected to be fed any more during the summer, they should have plenty of good grass. A mixture of grasses is better than clover. In July, before new corn is fit to cut up and feed, if the pasture fails and a better one is not to be obtained, it is best to mow some good, tender grass every day, and feed it to them. They will eat this greedily, and do as well on it as running on pasture. As soon as new corn is fit to cut up and feed stalk and ear, on grass, it should be done,

giving but a small amount at first, and gradually increasing up to full feed.

GOOD THINGS REPEATED.

A brood sow should be a good milker. However good in other respects, if deficient in this, she should hardly be retained as a breeder. An abundance of milk for the first eight or ten weeks of their existence is the best preparation young pigs can have to fit them for profitable growth in after life. It is not always possible to decide with certainty whether or not a young sow will prove to be a good milker; but as with cows, so with pigs, we may learn from observation and trial to know in some degree, judging from their general appearance, what to expect. Much will depend upon the dam and grandam in this regard. Milking qualities in swine are as surely transmittable to progeny as in cattle. Thus it is true of swine as of cattle, that this trait may be greatly improved by retaining only good milkers for breeders, as well as by feeding them when young, with a view to their development as milk-producers, rather than as fat-producers. For this reason spring and early summer litters are usually the best from which to select young brood sows. They can be kept through the summer almost entirely on grass, which, if abundant and in variety, will make them grow nicely, and, at the same time, the exercise required in grazing will keep them in good health and thrift. By the time the cold weather comes on, and corn is to be fed, they will have become nearly old and large enough for service. But even after this, continued care should be taken that too much corn, or other fat producing food, should not be given them. We must, however, bear in mind that at this period all animals naturally lay up fat, which afterwards goes to enrich the milk. Hence, while they should not be allowed to become over-fat they should yet be so fed as

to supply this demand of nature, and to retain the general health and vigor of the system. In the winter time there is not much danger of getting them too fat, and they should be fed very liberal.

FARROWING TIME.

When they have dropped their first litter, the most they will need for the first five or eight days will be cooling drinks, and very little rich food, scalded and then thinned. Milk feed, with cold water, is the best feed for ten days or two weeks. The richness of the food may be gradually increased, great care being taken not to feed too much at the start, but gradually increasing the amount until they have been brought up to full feed, which should be given regularly, at least three times a day, until the pigs have reached that age, and learned to eat and depend more upon their feed than the milk of the dam.

WEANING TIME.

The weaning of young pigs at any age should be done gradually and with care. If, for a while, they are kept from the sow a part of each day, they will the more quickly take to feeding on their own account. By thus preventing them from sucking the sow regularly, and at the same time lessening her supplies of milk-producing feed, her milk will diminish. By the end of the first week, under this treatment, the pigs may be taken away entirely, except, perhaps, one or two of the smallest, which may be allowed to go to her occasionally for a day or so longer. When a sow is trying to wean her pigs, and the milk has deminished, these precautions are not so necessary.

Special care in feeding at so young an age is, of course, required. They should be fed regularly and not less than three times each day. Corn and oat meal, in equal proportion, cooked together and then thinned with skimmed milk, make an excellent diet

for them. Wheat bran and middlings, the latter particularly, may also be used with the corn meal. Oats is the best and safest of the grains to be given whole or without cooking at this age. Peas, ground with corn or oats, or mixed with middlings, and all cooked together, can be used to good advantage; also cooked potatoes. The latter should be well mashed and thoroughly mixed with cooked meal, and the entire ration then thinned with skimmed milk. If cooked potatoes, only partly broken up, are fed in bulk with the meal, the pigs are apt to gulp them down too fast and thus over-load their stomachs. They then gag, leave the trough sick, and throw up part of what they have eaten. They sometimes do this also with other food, when given them in bulk, particularly if they have been allowed to become very hungry. If their feed be reduced to a liquid state there is less danger in this way; and then, having drank to their satisfaction, threshed oats or other grain may be given them to crack and eat at more leisurely.

Oil-meal, in the proportion of one part to six parts of corn meal, is good for young pigs. Barley and rye meal are also good. Variety in diet is advisable, yet no great or sudden change should be made in the feeding of pigs so young. Give them at each feeding only so much as they will eat at the time and see that they have a clean and dry place to sleep, and at all times a grass lot for exercising.

CHAPTER V.

FATTENING SWINE.

THE MOST PROFITABLE AGE TO FATTEN SWINE—FARMERS A AND B'S EXPERIENCE—MIXED HUSBANDRY—TIMES HAVE CHANGED—HOW TO FEED FATTENING HOGS—THEIR FOOD—WHEN TO COMMENCE FEEDING CORN—WINTER FEEDING—NEGLECT OF FARMERS OR FEEDERS—HOW MUCH PORK WILL A BUSHEL OF CORN MAKE—DOES COOKED FOOD PAY—FEEDING HOGS FOR A SPECIAL PURPOFE.

THE MOST PROFITABLE AGE TO FATTEN SWINE.

AS to what age is the most profitable to fatten swine there is a vast difference in opinion, and it is something that very often has to be governed, to a great extent, by situation; whereas, one person who may be so situated that they can afford to keep their hogs until somewhat matured before fattening them, another person may find that practice quite to their disadvantage, as the following discussion shows:

FARMER A'S EXPERIENCE.

I am in favor of the matured hog as a feeder. My experience for many years in the raising and feeding of hogs is that a hog from twelve to eighteen months old is the most profitable one to feed. I breed my sows to farrow by the first of May, or about the time the grass starts, then the loss of pigs is light on account of cold weather, and the sows will not require so much care in order to raise them. They seldom need to be put up at that time of the year on account of the weather if they have a suitable range,

and will, as a rule, save as many pigs. Then with a little care and plenty of feed and grass the pigs can be weaned in eight weeks and the sows rebred. I then give the pigs good attention for two or three weeks in order to get them well started; after that they will do well on grass with very little feed. I will admit that they do not grow as fast as if well cared for and well fed, but they are more healthy, and the expense of so much feed and care is saved. Besides I get my second crop and do not have to carry my sows a year for one litter, which I claim will not pay any feeder. And while the early fattener is raising his pigs at the highest possible expense upon the most costly foods during their whole life and carrying his sows a whole year in order to get one litter, I keep my one litter growing in a comparatively inexpensive way and building up my hogs every day to resist disease more successfully than the mushroom development can possibly do. This has been my practice for many years, and I claim it is the only true way of raising swine. I do not feed my young hogs very heavy the first year, but keep them until they have fully developed and have a frame strong in every part, which they will have done by the second fall, as they will then be a year or more old. They are then ready to take on fat rapidly. Now, as soon as the corn is in condition to feed, I commence to cut it up and feed it to them, and they begin to respond grandly at once and will take on fat so much more rapidly than a young hog, and with less risk as to disease. By proceeding in this manner they obtain a better weight and demand a better price in the market.

FARMER B IS IN FAVOR OF THE PIG,

And says: "No man can afford to keep a hog over winter, unless he keeps it for breeding purposes, and I firmly believe just what I say. No man can afford to

do that which brings him less money than something else he can do, for his neighbor will do the other thing, and then he can not compete with his neighbor. No man can afford to persistently lose money when by so doing he can get no future returns. Therefore, no man can afford to winter hogs for other than breeding purposes. Whether a hog is kept one year or ten years, it is most profitable to have it farrowed in the early spring. The pig farrowed in the spring requires very little food, other than its mother's milk, till grass comes. After that it will grow fast and keep fat on good pasture, if it has the skimmed milk and other slops from the house for a few weeks after it goes to grass. I have tried this so often, and have so frequently seen others do it, that I know positively that it can be done. The past year my hogs were in extra good condition for market at any time after the first of June, and all the food they got was, as stated before, an abundance of blue grass, timothy and clover pasture. This was all they had until the middle of September, when the grass began to fail. By that time they weighed not far from one hundred and seventy-five pounds. I know that many will smile at the idea of the common farmer making his nine or ten months old hogs, or pigs, if it pleases you better, weigh three hundred and twenty-five pounds. But I know it can be done, for I have tried it too often with the same result to be mistaken. You can not do it with scrubs, you must have good hogs; you can not do it with good hogs if you neglect them, they must be well cared for. The market now demands a hog weighing about three hundred pounds, and a spring pig fed and treated as I have indicated, is what the market wants, and it will, therefore, bring the highest price. And last, but not least, it is true, that the longer a hog is kept the greater the likelihood of loss from disease or accident,

and this is another argument in opposition to wintering hogs.

MIXED HUSBANDRY.

Here we have the experience of two breeders and feeders, both claiming that they have tried their system thoroughly, and both believing they are right. Experience and observation teaches me that mixed husbandry is the true system of farming for the majority of farmers, and the same rule will hold good in swine husbandry, but should be varied according to circumstances. Some may have an abundance of cheap pasture land or forest to let their hogs run in, and, by so doing, can keep them until a year or more old, at a small expense, compared to what other farmers can, who live upon high-priced land and have to keep their hogs more confined. In the former case A's system would, no doubt, do, but it is a system that but few farmers in the older States could adopt at a profit; for I am satisfied, as a rule, where there is anything except a very light expense in keeping the hogs, no one can afford to keep a hog much longer than one year, except for breeding purposes. A's system of breeding, so as to get two litters a year, is very good with his system of feeding, for the spring pigs can be raised with very little expense, until late in the fall, when they would have acquired such age and size, as to bear heavy feeding, and if well fed and cared for until the following summer, should have obtained a good marketable weight, when I would consider it far more profitable to sell them than to feed them longer, and take the heavy attendant risks. For generally there is more disease during the late summer and fall than any other time of the year, and the markets are better than later, when the heavy bulk of hogs are on the market. As for the fall pigs, they will have to be well cared for all winter, and until grass comes, if

anything is expected of them; they could then be turned on grass until new corn is fit to feed, when they should be fed off as soon as possible, for I do not believe in keeping a hog or any other feeding animal, one day longer than it takes to fit it for the market. There are instances where money is made by holding on for a while for a rise in the market; but that is only speculating, and the chances are, two to one, you lose. One is, the market will decline, and the other is, death. And this is where B has one advantage: He believes in forcing his pigs, by giving them as much feed and care in nine or ten months as A would his in fourteen months or longer, and thereby have as good hogs, and save the risks of death and interest on the money for six months, which is quite an item in his favor. But then he can only turn off one lot of hogs in a year, and have to carry his sows a whole year for one litter of pigs, or else breed young sows all the time; which, in either case, would offset his gain. Therefore I am in favor of two litters a year, or at least three litters in two years, and pushing them right along, never keeping them one day longer than I can help.

TIMES HAVE CHANGED.

A few years ago the most fashionable weight for a market hog was greater than now. Hogs of three or four hundred pounds gross weight were considered the best for market and were the favorites among the farmers. The farmer demanded a breed that would produce even heavier weight than this. The man who had the biggest hogs for market was credited with having the best lot. If a man had a considerable number which would average about four hundred pounds it was noised about the neighborhood that this man had a superior lot of hogs, and he was spoken of as a good hog raiser. But this is now all changed. The market demand is for a hog weighing somewhere

between two hundred and three hundred pounds, and the nearer it is to the middle ground between these the better, while it is just such a hog which has grown most fashionable among the farmers. The hog of medium weight is the popular market animal, because consumers have learned that such an animal yields meat of the best quality, and they have grown more discriminating and critical. Medium weight hogs not only cut in pieces of the best size, but the flavor of the flesh is superior; hence, the consumer demands a two hundred and fifty pound hog. Packers have favored this demand of consumers because the medium weight hog is the one most easily cured. While the packing was all done in winter large hogs could be cured without much trouble or loss. But now the packing is continued throughout the year, and for summer packing hogs of less than three hundred pounds weight are demanded. The demand of consumers and packers should lead the farmers to produce medium weight hogs, but this result has been hastened by the discovery on the part of farmers that such hogs were more profitable than those weighing about four hundred pounds. A hog which would attain to the latter weight had to be kept until eighteen to twenty months old, and therefore had to be fed throughout one winter and through part of the second. This made expensive pork and greatly increased the dangers of disease. Farmers come to figure more closely the cost of production and found that the cheapest pork was produced by growing and fattening a pig at the same time till it was nine or ten months old, by which process it could be made at that age to weigh from two hundred to three hundred pounds. Thus all circumstances have conspired to make the hog of this weight the popular one.

HOW TO FEED FATTENING HOGS AND THEIR FOOD.

With this, as with the age of swine, there is a vast difference of opinion. As for the food for them, corn occupies the first place.

Dr. Stetson says: "It makes no difference to us where or when this grain originated, or who first found out its use for feeding and fattening hogs — no doubt he found it out himself, as he has the habit of helping himself to anything good to eat, providing he can always reach it — but that corn was intended for the the hog, and the hog for the corn, is an opinion generally accepted."

The only difference of opinion is, how shall we feed it? When the time has come to fatten the hogs, especially in the fall, some prefer to put them up in a pen or small lot, so as to keep them quiet, and keep corn by them all the time, and think by this means they will take on flesh faster, while others prefer to turn them into the corn field and let them feed themselves. Both are old and unprofitable ways of feeding, and should be abandoned, for they are not only wasteful and show bad husbandry, but are the causes of the death of more hogs than any other methods of feeding. The true method of feeding hogs to insure health and thrift and produce fat, is to feed them two or three times a day, and only what they will eat up clean at each feed.

WHEN TO COMMENCE FEEDING CORN.

It is best to commence feeding corn upon grass, so as to not make the change of food too suddenly, and great care should be taken not to feed too much at the start, but gradually increase the quantity until it amounts to a full feed, then feed regularly, and no more than they will eat. This gives their food a chance to digest between feeds, while, if they are kept eating all the time, their food passes off only partially

digested. The most profitable time to commence feeding is, as soon as the grass begins to get tough, or to depreciate. About then the roasting ears have formed, and if the corn is cut up and fed, stalk and all, on the grass, the hogs will eat stalk and ear for a while, and by the time the stalk and grain are hard, and it is desired to bring the hogs up to fuller feed, they will be ready to assimilate greater quantities of corn. This method of feeding not only economizes feed, but prevents shrinkage during drouth and keeps the hogs in prime condition, so there is no loss of flesh or derangement of the system. The change from scant grass to a gorge of new corn is too sudden. The vast amount of starch taken into the stomach can not be assimilated, and it either ferments or passes off undigested. Then the digestion is deranged, and that is why some of the hogs get sick. It is not cholera, and as Phil. Thrifton says, "There is no sense in squealing about bad luck and providence." It is simply lack of care, and a bad case of destructive feeding. The chances are, some of the hogs will die, and the most of them are so impaired that the corn will be fed at a loss. By changing feed, and by care and good handling, they can be brought back to a fair appetite. But there will only be a gain of a few pounds to the bushel fed, compared to what there would have been if they had been commenced with sooner, and fed more moderately until brought up to full feed; and it is best to continue to feed on grass, rather than in a pen, until the hogs are about fatted, for a certain amount of grass as rough food is essential to their health.

FOR WINTER FEEDING.

Late in the fall or for winter feeding, they should be put up in close quarters and fed on a dry earth or board floor, and given bran or mill feed slops twice a day, with occasionally a feed of vegetables of some

kind, or else cut up clover hay and mix corn-meal or mill feed with it, then wet it with hot water and let it stand a while before feeding. This makes a variety of food which they will appreciate. They should always have a dry, clean, warm place to sleep. All pen fed hogs, or hogs fed in dry lots, should receive this attention if you wish them to do well. Do not compel them or any other stock to drink bad or ice water, or go without, eat one kind of food all the time, stand around and shiver with cold, and sleep in the mud, if you expect to get well paid for your feed and labor.

NEGLECT OF FARMERS OR FEEDERS.

A large proportion of farmers do not provide comfortable shelter for their hogs. They have tried the experiment and know that they will not freeze to death in fence corners. Well, if they do not freeze to death, it is simply because they burn up in their systems enough of the farmer's corn (which would otherwise make pork) to keep themselves warm. It would certainly be much cheaper to provide them with suitable protection against the inclemency of the weather, than to expect them to keep themselves warm by burning corn. An open shed, under which about one-half the hogs can stand, and which forces part of the hogs to pile upon top of the others, when some are liable to be seriously injured, is not sufficient. Of course, on a cold night, hogs will do this to a greater or less extent, but in suitable quarters it will rarely be done to their injury. Sheds, of course, may be made too warm, and subject the animals to colds, but no careful farmer should dispense with them on this account.

Many people also realize less from their feeding operations than they otherwise would by attempting to prepare for sale, at the same time, a lot of hogs of different ages and conditions. In consequence of this diversity part are ready for market a long way in

advance of others and consume considerable corn while waiting for the others to be gotten into the desired condition. A better way would be to select lots as nearly uniform as possible that they may all be ready for market at about the same time. After they are worked off another lot may be finished off, and so on.

Many people have an ambition to make their hogs as heavy as possible and seem unwilling to sell a hog until they know that it has reached such a weight as render it almost impossible to put on another pound. These extra heavy hogs are very fine, but it is too often the case that the last hundred pounds has been put on at such an expense as to eat up all the profit of feeding.

An animal, having gained fifty pounds in weight, will not put on another fifty pounds on the same food that was required for the first fifty, and the third fifty will require more food than the second fifty, and so on until a point is reached where no amount of food will increase the weight. So a hog of certain weight, varying with individuals, and perhaps with breeds, can be fed at a large profit, and beyond this they will make but very small returns.

HOW MUCH PORK WILL A BUSHEL OF CORN MAKE?

The great question of the value of corn for swine has never been and can not be actually demonstrated. How many pounds of pork a bushel of corn will make is what no man has yet found out. All experiments in feeding have only proven what certain hogs, under certain conditions, have made to the bushel of corn. Now, whether this gain was ten pounds, more or less, to the bushel fed, it established this and no more, that in certain conditions so many pounds of pork have been made from a bushel of corn. There are so many things to be taken into account, as age, breed-

ing, the season of the year, mortality, etc., that anything like a general average is almost, or entirely, out of the question. If anything is well established in feeding it is that the young of swine, as well as other animals, will make a very much better gain from food consumed than older animals. The gain is always much greater in warm weather than in cold; and old corn, either soaked or cooked before fed, is much better, and will produce more flesh than if fed dry, for it is much easier masticated and digested. The way to feed corn in any form to get the greatest returns from it is on grass. Three bushels fed then to young hogs will produce more pork than five bushels fed later in the season to older hogs. The best profits in raising and feeding hogs can be obtained until they will weigh about two hundred and fifty pounds; after that the profits are less. This again shows us how important it is to take care of the young hogs and not keep them any longer than we can help.

WILL IT PAY TO GRIND AND COOK CORN FOR OUR HOGS?

Upon this subject of grinding and cooking food for animals, I have been a close observer, and have had some experience, not only for hogs, but for dairy cows; and as I am so frequently asked this question, "Does it pay to cook food for hogs or other stock?" I will here give my opinion upon this subject. There is no doubt but that greater gains can be derived from cooked food than from uncooked food, but if enough to pay for cooking it, is the question. When the price of grain and other feed is high and where labor and fuel are cheap, as is often the case, it will pay to cook food for stock, or at least for some kinds of stock, such as milch cows or sows suckling pigs, in order to increase the flow of milk; or, for young pigs, to aid in digestion. But where grain is cheap as it is in most parts of this country, and there is such expense attached to

preparing the food, by grinding, cutting and cooking it, I doubt very much if enough gain can be made in the operation to pay for doing so. Any young animal with good teeth will grind and digest its own food, when not over fed and crowded; when a crowding process is used, and the animal is being forced to produce either milk or fat, it is best to cook, or, at least, soak the feed, so as to be more easily digested. Where the cost of machinery, the labor of running it, in cutting and grinding the feed, the cost of fuel and labor in cooking it, are all taken into consideration, it is a question if there is enough profit derived thereby to pay the general farmer for doing so, or, at least, I have seen it well tested by practical men, and abandoned entirely. There are times though, when it can be done at a profit, but they are only when feed is high, and the cost of preparing it is low. There is some grain that should never be fed unless it is cooked, or soaked. For instance, wheat; if it is fed to stock dry it is not properly masticated, and when taken into the stomach, it swells so as to cause bad results; and old corn is better cooked, or soaked twenty-four hours before feeding, as it is more easily digested. In instances of this kind, or where we want to increase the flow of milk, or we wish to establish something else in its place, cooked food will pay. For we all know that nature's element, milk, cannot be equaled even in the laboratory of the chemist; and when milk can not be obtained in sufficient quantity, their drink should be as palatable and as near blood heat as possible in order to get large quantities of it into their stomachs. Two parts of corn and one of oats, ground together, and added to an equal bulk of wheat middlings, will prove satisfactory to the taste of the pig, and good effects will follow its use. It is a well established law in the physiology of digestion, that it is not the quantity of food eaten that

nourishes the body, but the quantity digested, or assimilated. If it is the last feather that breaks the camel's back, so it is the extra grain of corn digested that pays. It takes a certain amount of food to supply the natural waste of the system, and all above this quantity is stored up in the form of fat and muscle. Corn, soaked in cold water, for from twenty-four to fourty-eight hours, is rendered very much more digestible in the stomach of the pig than when not so treated. Always keep in mind that the greatest quantity eaten and digested is the true secret of success in fattening animals.

A few words as to the importance of fluids in the system to aid assimilation. All animals, from man down, that, in a state of health, consume a large quantity of fluids, take on flesh in the same proportion. It is not the nourishment contained in the lager beer of our Teutonic friends that gives them their barrel-shaped abdomen. The same quantity of water, pure, and uncombined, with the same amount of nutriment consumed, would produce the same result. Show me a fat man, woman, or child, or any other animal, and, if not proven greater drinkers, they are the exception, and not the rule. The chemist will tell us, that it takes so many pounds of green grass to be equal in nourishment to a given quantity of dry hay. But it is well known that grass is more "hankered after," and more readily assimilated and taken up by the digestive apparatus, more especially in animals that do not chew the cud.

There are just three things that give the hog its commercial importance: First, their flesh can be preserved for use, and kept for an indefinite time, as the flesh of no other domestic animal can be. The second is their extraordinary fecundity, six, twelve, eighteen, and twenty-four, or even more pigs at a single litter.

A sow would hardly die of old age, before she might become the common ancestor of more hogs than are now to be counted in these United States. The third, and most important characteristic of the hog is, that he is a hog, ever ready and anxious to assimilate any article of food that comes in his reach. In plain English, the hog has a stomach made for digestion. All that any hog wants is plenty to eat, and his neighbors must look out for themselves. Yea, verily, any hog with a full stomach is at peace with himself and the world.

FEEDING HOGS FOR A SPECIAL PURPOSE.

When hogs are put up for final finish on corn they are expected to return a fair profit for the expense incurred in the shape of a fat carcass. It has been a time-honored custom in this country to fatten with corn, and but very little other food is used after the hogs are penned. Although a fat hog is desirable, yet the majority of farmers prefer to have the meat interspersed with a proportion of lean. That the carcass may be improved in quality without loss of weight, by judicious feeding, has been plainly demonstrated at the Missouri Agricultural College, where several lots of hogs were fed on different kinds of food. In addition to corn the food consisted of shipstuff, used alone, and also on some lots in connection with corn. The hogs fed on whole corn consumed less than did hogs fed on corn meal, but the gain was greater from the ground corn in proportion to quantity.

In comparing the value of corn and shipstuff, two lots of pigs were used for experiment, the period being from March to November, the one lot on whole corn and the other on shipstuff.

One corn-fed pig dressed 82 pounds to the 100 pounds and a ship stuff fed pig 80.6 pounds. On severing the heads of the corn fed pigs scarcely a

trace of lean meat could be found, while in the ship stuff fed pigs it was decidedly more abundant. Lean meat was also selected from the thighs, loins, and shoulders of each lot and examined under a microscope. The shipstuff fed pigs carried less fat, even in the fibres of lean meat, than the corn-fed lot. The results were sufficient to show that the exclusive use of corn meal for a feeding ration is detrimental to a vigorous and healthy muscular development, producing a pig easily subject to disease, distasteful and more costly than necessary. The relation of the shipstuff to the meal in the trials deserves attention. It was found that 93 pounds of shipstuff gave the same gain that 100 of corn meal gave. Shipstuff, however, has been considered but of little value heretofore by farmers, and this has seriously interfered with its general use. Repeated trials with it showed that 100 pounds gave 28.1 pounds gain, and 100 pounds corn meal gave 26.4 pounds gain. Having repeatedly advocated the importance of keepings pigs in a growing condition during their early stages, and the use of different kinds of food, as it promotes a better quality of carcass, it is gratifying to know that the experiments of the Directors of the Missouri Agricultural College is the same.

In feeding hogs on corn alone the animals are deprived of many essential elements demanded for purposes of growth. Laying on an excess of fat renders the meat unpalatable. A comparison of the weights above shows that there is but little difference in the gain between corn and shipstuff, while the quality of the meat from the hogs fed on shipstuff alone is superior. Nor is it necessary to use shipstuff alone. Hogs may be increased in weight by using ground oats as well as shipstuff, and while being made fat in one respect will also have a large propor-

tion of lean meat. The opinion that corn is absolutely necessary for hardening the fat, and must not be omitted, is mainly correct; it is really superior to other grains in this respect.

When corn is ground into meal it should never be fed alone, as it packs too close in the stomach or intestines. It should have whole oats, barley, rye, or course bran mixed with it. If crushed fine, cob and grain together, and then cooked, it is better than the meal and can be fed alone. The cob has not only a large amount of nutriment in it, but prevents the packing of the meal.

Corn is a staple crop and farmers find it more convenient for feeding to hogs than anything else and should not discard its use; but the farmer who desires to produce pork of the best quality should feed ground oats and shipstuff in connection with it. Nor should roots and a variety of food be omitted, as such food conduces to the health of animals, and this is very important, owing to the fact that a healthy hog will grow and increase rapidly. It should be considered also that good, warm, dry quarters will save food and greatly conduce to greater attainment of weight.

PROFESSOR SANBORN'S EXPERIMENTS.

Professor Sanborn, of the Missouri Agricultural College, according to some of the agricultural papers, reports interesting experiments of six years experience in feeding pigs upon whole corn, corn meal, and shipstuff, and in all his experiments the shipstuff proved the superior feed. He calls attention to the fact that 93 pounds of shipstuff gave the same gain in live weight as 100 pounds of corn, and says: "This has been the continous result for six years," which he regards as a demonstration of its correctness, as the first three years experience was with 30 head of pigs. These experiments are valuable and should prove

beneficial to all swine breeders, and especially those that regard all other feed for swine second to corn, or think that they need no other feed than corn and go on continuously feeding to them that great fat and heat creating food.

CHAPTER VI.

PURELY BRED SWINE.

PEDIGREED SWINE—WHERE THE PROBLEM COMES IN—PRIVATE REGISTRY—A GOOD TIME TO BUY PURELY BRED SWINE—THE SHOW PEN—THAT FINE PIG AND ITS CARE—DO NOT GO TOO MUCH ON THE COLOR—WHERE TOO KEEP THE YOUNG BOAR—BREEDING SWINE FOR BREEDING PURPOSES—THIS BUSINESS DEMANDS A GOOD PROFIT—WHEN TO BREED THE SOWS—TAKE CARE OF THE BROOD SOWS AND PIGS—FITTING SWINE FOR EXHIBITION OR SALE.

PEDIGREED SWINE.

A GREAT deal has been written, and is still being written about pedigreed swine; in fact lately more than ever, as all pure breeds are being registered in their respective herd books, and of course it brings out hot discussions pro and con as to its fallacy. The breeders of purely bred swine, supported by the agricultural press claim that they should be registered, because the general public demands to know the history of an animal when it is offered for sale. Registered stock is worth the most money because, and only because, the herd book tells precisely what the purchaser is getting when he buys. No one claims that the fact of registry multiplies or strengthens the merit of the animal; it simply tells where the animal came from. A thoroughbred animal is just as good in itself without registry as it is with it. But how are we to know that? Simply this: If the animal is entitled to registry it must be purely bred, and if it is not entitled to registry it is considered a grade. Here is an

animal declared by its breeder to be perfect and purely bred, but he declines to register his stock, and, of course, can not give any registered pedigree. He may declare the herd book a fraud, and of no value, and say that he can give a pedigree without going to a register. The answer to this is, if the pedigree is worth anything it will run back to registered stock, and, if the breeding has been pure, the animal is entitled to registry.

It is to be taken for granted that every man recognizes the established principles of breeding; that he acknowledges that there is such a thing as prepotency, and that he knows unpedigreed stock may produce its like or may not. If this well-known truth is not recognized, the only advice to be given is, to keep out of fine stock breeding. This truth must be recognized and settles the matter concerning the value of registering.

Whether these swine herd books tell the purchaser precisely what he is getting when he buys, is another question. It is natural to presume, as with other herd books, that they do, but the great prolificness of swine makes it doubtful. The swine breeders claim now to have these registers so formed that fraudulent pedigrees cannot be entered. That is, in order to register, the pig must trace to registered stock. This was done to prevent fraudulent freeders from selling bogus pigs, and to prevent the records from becoming too cumbersome.

Now, if the swine breeders have these books so formed that they can control the records, and trace the pedigree of a hog as the pedigrees of cattle and horses can be traced, so as to expose and keep out fraudulent breeders, they have accomplished something that will go a long way toward improving American swine. This will evidently be the case now more than in

former years, as the different improved breeds are more numerous, and more on an equality, and all breeders are striving to gain first honor. Therefore it will put the breeders of all the respective breeds more upon their guard, as they must depend upon pure blood and merit, more than pedigree and color, to gain or hold first honors; the breed that will win, is the breed that has the quality. Whether the public records can control that quality, is for the future to determiue.

PRIVATE REGISTERS.

There is one thing that every breeder of swine who breeds for breeding purposes should do, that is, keep a correct private record of all the stock he sells or keeps for breeding purposes. This is not only necessary in order to keep from selling his customers pigs too near akin at the present time, but also in the future. Then if he records his stock in the public records, in case his herd is diminished by sickness, he can trace back, by reference to his registry, all that is left, and in this way make less mistakes than where he trusted too much to his memory. Even if breeding only a few hogs, this is absolutely necessary.

In breeding for home use, that is, when a breeder's customers are in his own, or adjoining counties, it does not make so much difference whether his stock is recorded in the public records or not, unless so desired; for his own private register is all that is generally needed to satisfy any customer, providing the hogs have the quality. When a breeder advertises largely, and expects to ship stock abroad to all parts of the country, he will almost be compelled to adhere to the custom, as in these days it does not do to be a mite behind in any business, and it is easier to float with the current than to row against it.

A GOOD TIME TO BUY PURELY BRED SWINE.

Every few years there seems to be a lull in the excitement that prevails throughout the great corn producing States upon improved breeds of swine, and many gentlemen who have invested large sums of money in founding herds for breeding purposes abandon the business as an unprofitable one owing to the great falling off in the demand for purely bred pigs.

It is true that the quality of the swine throughout the country at large has been greatly improved by the efforts of the leading breeders during the past years and that first class specimens of all the leading breeds may now be found in almost every neighborhood, but it must be borne in mind that none of our domestic animals deteriorate so rapidly as swine; and it will require but a few generations of neglect to lose all the excellence that years of care and attention have attained. Careful selection of the very best for breeding purposes, good judment in coupling, generous feeding, and the utmost care to avoid the bad effects of too much in-breeding, are all essential to prevent the deterioration, which is enevitable when these are neglected.

When these lulls occur it is an unusually favorable time for men of judgment and skill to embark in the business. The neglect of the past year or two is beginning to be seen and felt. Prices are low, good breeding stock can be bought for almost a song, and the prudent man should take time by the forelock and prepare for the great demand for good, purely bred swine, which is certain to speedily follow the present season of neglect and indifference.

Those who wish to commence breeding purely bred swine will find this a much better time to buy good breeding stock than when the demand is greater, for three reasons: First, there being no demand, the

breeders are more negligent as to the care of their stock, and therefore it is not so fat, and one can see better what he is buying. Second, as they are more heavily stocked and want to sell out there is much greater advantage in making a selection than there would be if they had less stock or did not want to sell. Third, they are not apt to be so high in their prices, which very often is quite an item to the new beginner.

SHOW PENS.

New beginners who are contemplating the breeding of fine stock should not visit fairs or show pens for the purpose of buying their breeding stock, or if they do, should use good judgment and discretion as to what they buy. Not because exhibitors do not show their best stock, for as a rule they do, but because they are likely to be over-fat and to have been tampered with, to have been fed all kinds of food, and to have received such attention as the new purchaser could not give them in their new home, or would most likely fail to give. Therefore, they are not likely to do as well or to be so profitable as those that have never been on exhibition. The animal that is to develop into a strong, vigorous one, with the greatest amount of vitality and force, must be fed so as to produce force and fibre, and not fat only. This the exhibitor may not have had in view. He may have fed only for plumpness and fine appearance. His interest is to please the eye in order to sell the animal or win the premium. Fat covers up defects and rounds out perfections. This is the reason a fat animal with fine appearance always wins the premium and outsells one that is in only good breeding condition. And then, when an animal has taken a premium it always attaches a fictitious value to it as a breeder that is of no value to the buyer. In most all

cases it will be money saved and money made, to visit some of the breeders, and look over some of their stock at home, and buy out of the field in preference to the show pen. This precaution is just as essential in buying any other stock as it is in hogs, especially cattle or sheep, Hogs, cattle and sheep are more likely to be over-fat than horses, and more likely to be barren. A great many fine show yard animals are barren and will not breed, and are traveled about from one show to another only for the purpose of showing them for the premium, and waiting for an inexperienced buyer. In buying these fine and high-priced animals, it is always best to secure with them a written certificate or guarantee that they are breeders.

THAT FINE PIG AND ITS CARE.

There is so much disappointment among buyers of fine pigs that it may be well to give the subject a little attention. As a breeder remarked, the breeder or farmer who sends off for a choice pig, and pays from twenty to one hundred dollars and express charges for it, naturally expects upon its arrival something very fine, and would be expected to think enough of his purchase to give it good care and to have a place for it when it arrives at the farm. But truth on both sides of this question compels the statement that the majority of the buyers are disappointed upon the arrival of the pig, or if not, often do not know how to handle it, or neglect to handle it in such a way as to secure the greatest benefit from it, and to keep it up to the standard it had attained before its purchase, providing it was a good one. Having been engaged in the breeding of fine hogs for about ten years, I will give to the readers of this work the benefit of my experience in the business. I think all honest breeders of fine hogs will agree with me that, First, when the purchace of a fine pig is contemplated, the purchasers should visit

some responsible breeder and select it themselves, or at least assist in doing so. They know what kind of hogs they have, and what they wish to mate the hog with better than the breeder does, and by having quite a number of hogs to select from, they can no doubt suit themselves better than most any breeder could by writing to him, and then both will be better satisfied, and the trip is most always worth the expense in one way or another. If the distance is not so great but that the journey can be made in a day with a team, enough money can generally be saved to pay well for making it. Second, remember that the best pedigree is the pig first, then its ancestors. If they are all of such quality as to suit the purchaser, some confidence can be put in the paper, providing the party is honorable. There are to day too many swine sold by recommendation, but it is the buyer's fault if he is cheated. Every man should buy on his own judgment, and then have no one to blame. In buying by correspondence, the purchaser should try and make his order as plain to the breeder as possible. If it is a male pig that is wanted, describe not only the kind of pig that is wanted, but the kind of sows that he is expected to be used with. This not only gives the breeder the knowledge of the kind of a hog that is wanted and what is expected of him, but gives him a chance to use his judgment in the matter, and in this way he can generally select a pig that will give much better satisfaction.

DO NOT GO TOO MUCH ON THE COLOR.

Unless for some good reason a pig of a certain color is wanted, I would say, do not put too much importance on the color,—better discard the color than any other good point. Any of our pure breeds are true enough to their color. One thing more: too much must not be expected in a pig two or three months old.

One may order the kind of pig he wants, and the breeder may think he has a pig that, judging from its ancestors, will make the kind of a hog wanted. Give it time, and then if it proves a snare, the next time a pig is wanted, see it first before buying it, and do not blame the pig or the breeder because its pedigre was furnished, for that was only on paper, nor the editor of the journal that contained his advertisement, for he probably knew no more of the man than you did, and, like yourself, was imposed upon.

When the pig arrives at its new home, care should be taken not to feed it too much for a few days. The kind of food it should have at first is very important. It may have been boxed several days, its food has been dry, and of drink it has had none; hence, laxative food is the kind it needs now. Turn it out and give it a drink of cold water first, after that, some good house slops or milk, with mill feed or oats in it, for a few days, and it will soon recover from the effects of its trip and come back to its usual appetite and condition, when its feed can be gradually increased. A great many buyers of fine pigs want to give them too much care in the way of food when they first get them home. They will feed plenty and often; first one of the family will feed them, and then another one, and before they are aware of it, the hogs are foundered, and they wonder what ails them. They have had too much food, particularily corn.

WHERE TO KEEP THE YOUNG BOAR.

There is no better place for the young boar than a grass lot, large enough to furnish him fresh grass and room for exercise, out of sight and hearing of other hogs. Here he will exercise enough to keep strong and in prime condition, if fed regularly and judiciously. He is half the herd, and he must be kept quiet and in strong condition, if he is to impress his qualities with

surety on the coming pig crop. A pig thus cared for, if well bred, will not likely prove a delusion and a snare. A pig of equally good breeding and qualities, penned in a dry lot, with corn and mud, and brimming sows always in sight, will soon be out of condition, and is likely to be restless and thriftless by breeding time, and without the strength and force that should belong to the successful sire. His owner becomes disgusted with his late purchase, and denounces the breeder of the pig; whereas, the fault is not in the pig or breeder, but in the ignorance and carelessness of the owner.

BREEDING SWINE FOR BREEDING PURPOSES.

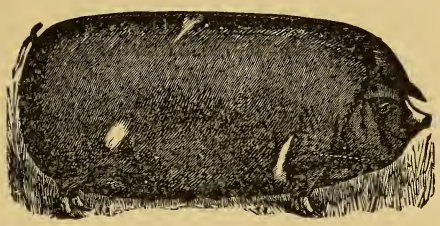
There is no material difference in breeding swine for breeding purposes and feeding purposes. The successful breeder of feeders can easily become the successful breeder of breeders; for the same law and rule governs both, the system is the same, and to be successful with either one the person must have a natural love for the business. This desire for the business is the first and most essential element, for then there is nothing that is too much trouble for the breeder to do. He will always have his hogs fat and looking well no difference how the weather is or how much work it may take. If the weather is cold he will get up at all hours of the night to look after some favorite sow that he is expecting to farrow and never forsake her until he sees her new-born family safe. Then he will carefully house, feed, and care for her and the pigs, never neglecting them for a single day, or even a feed, until they are disposed of. There is no food too good for them to eat, no difference how much trouble it may be to prepare it, it must be done. They are carefully watched and kept out of the mud, and if they do get in it, it is washed or cleaned off. The house or pen is kept warm, but well ventilated and clear of filth or

vermin. Good feeding troughs are provided for both sow and pigs and kept clean. The pigs and sometimes the sows are turned out every day for a ramble or exercise, the time being governed by the weather. The feeding is done as regularly almost as the clock strikes, and at least three times a day, and often five times a day, the age of the swine, or their preparation for some special purpose, governing that to some extent. The feed is always of the best, and carefully given in quantity as the size or condition of the swine may require. Every precaution is taken not to make them wild, always preferring to call instead of drive them, for by this means they can be kept quiet so that they can be carefully handled at all times, which is a very important thing with all hogs, and especially breeders. By complying with these rules, and some more I will speak of farther on, with good judgment, plenty of money, and a good place to carry on business, any one can become a successful breeder of swine for breeding purposes.

THIS BUSINESS DEMANDS A GOOD PROFIT.

The business of breeding and handling purely bred swine, as well as other purely bred stock, ought to, judging from the nature of the case, be a profitable one. The cost of conducting the business, not only in procuring the stock and caring for it, but the risks that are combined with it and the cost of suitable buildings and fixtures demand for the operator a good margin on which to work. The breeder who begins by working too close in this direction or neglects his business must fail outright and quit the business in disgust. There are many instances known in this country where the breeding of purely bred swine resulted in the accumulation of considerable wealth. A great many wealthy men, though, have gone into the business of breeding purely bred swine as a pastime,

or a source of expected profit, but finding it no easy matter to accumulate a fortune at it, quit the business; for the reverses are sometimes heavy, and even under the most favorable circumstances it is not always profitable.



IMPROVED POLAND-CHINA.

The breeding of purely bred stock of any kind, in order to be made profitable, requires money, good judgment and management, not only in buying the stock, but in the management and selling of it, in the latter case especially. In order to make it both profitable and pleasant, as I said before, the breeder should have a natural love and desire for the business. A good situation is also necessary, although most any place can be made suitable with labor and money. A dry, rolling piece of land, with plenty of good water and shade, is the best, for it is much healthier and far more pleasant than a wet, level place. In purchasing the breeding stock to begin with, nothing but first-class individual stock should be purchased at any price. It should be purely bred of whatever breed the breeder desires, and of good, thirfty, growing stock. Good judgment should be used in procuring this stock, for it is not always the highest priced animal, or those that are purchased the farthest away from home that are the best.

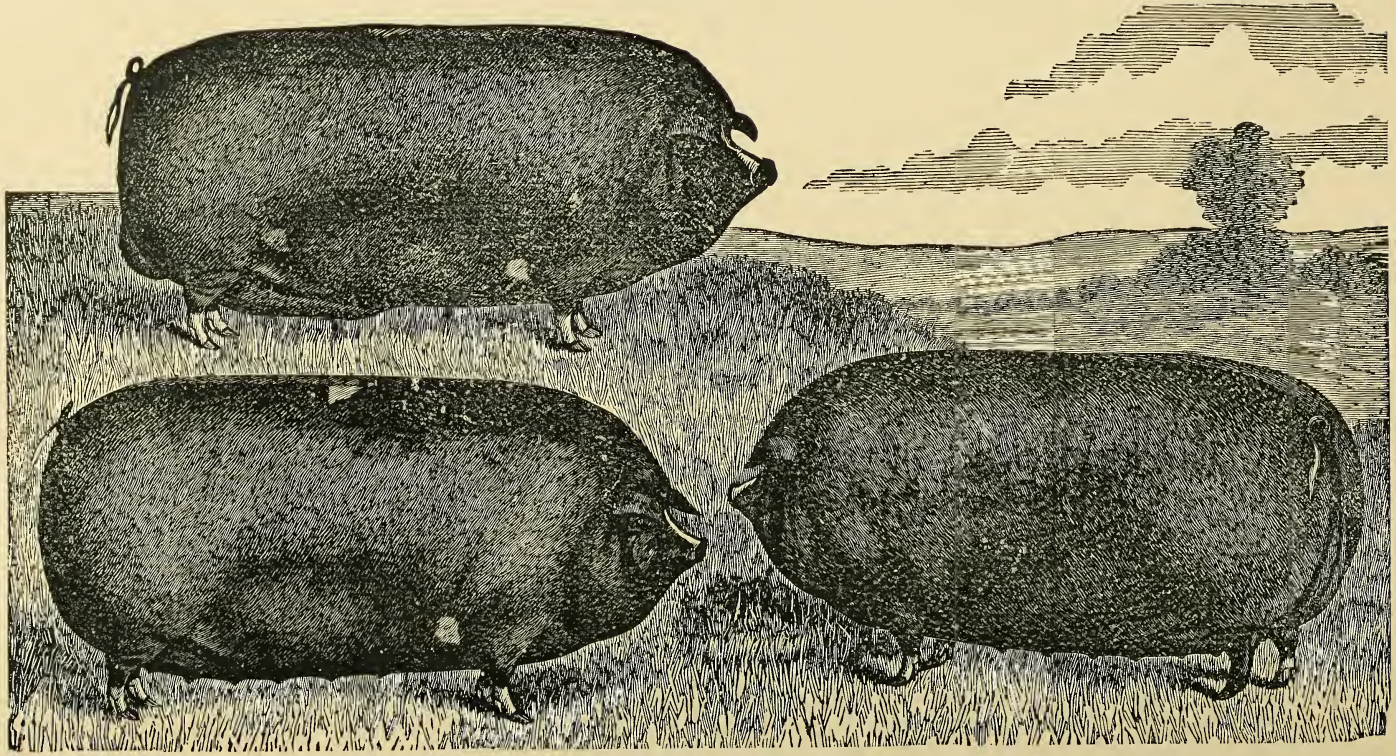
Breeding stock of any kind is often held above its worth. It is not infrequently the case that a breeder asks much more than the value of the animal, or the cost of its production will warrant. The purchaser

must be on his guard on this point. This, however, is rather exceptional, for, as a rule, breeding stock is worth all it commands in the market.

WHEN TO BREED THE SOWS.

When the stock is brought together again, good judgment must be used in the breeding, so as to have the pigs come at the proper time. If the herd, or any part of it, is to be exhibited the coming season, the pigs must come so as to be of the proper age to suit the premium list; or, if only intended to be sold during the season without being exhibited, it is best to have them come as early in the spring as possible, so as to have the advantage of as much age and to be as early in the market as possible, as pigs with the advantage of a few weeks in age have quite an advantage over the younger ones, either in the show-pen or in the market. Of course, in order to have these early pigs, and to save and care for them, good quarters of some kind are necessary. It is not necessary that these buildings should be costly, but they should be so constructed as to be warm, easily ventilated and kept clean. For information on this subject see plan of pens.

Now, the next thing on the programme, is the care of these hogs. This is something that breeders cannot afford to slight in the least, if they expect to compete with others. They must have their hogs fat, sleek and clean, looking well at all times, and ready for a purchaser, for in this business, like any other, no man knows when a buyer may come. Therefore, be ready at all times and for all kinds of customers, for the least thing will sometimes drive a buyer away; such as a coughing pig, or the hogs not fat and looking well, dirty, filthy pens, and perhaps some of the pigs or hogs lying around in the manure pile or a dusty shed. The buyer will soon begin to talk about disease and leave. Remember that nice, fat, clean, sleek hogs,



GROUP OF POLAND CHINAS

with everything around clean, pleases the eye; and that is what is wanted if the sale of the hogs is expected, and the breeder expects to prosper.

TAKE CARE OF THE BROOD SOWS AND PIGS.

As the sows are bred, each one should be carefully registered so as to know when they will farrow. There is but little variation from sixteen weeks as the time sows carry their pigs; the older ones not infrequently going beyond a few days, and the younger ones farrowing a few days earlier than this. If proper care be taken in the management of the boar, allowing but one service to each sow, the dates at which the pigs should come can be made a matter of record, and the necessary attention given the sows as the time for their farrowing approaches, when they should be put up separately and in time in order to prevent any accident that may cause the sow to lose all or part of her pigs. If their quarters are warm and dry it is about all that is necessary, except in extreme cold weather, when the pigs may need looking after. Here is one place where it pays to have the sows quiet, for at the critical hour assistance can be given the pigs to get around to their mother's breast, and after they are all snug and safe, if she and the pigs are covered up with an old horse blanket or a piece of carpet she will remain quiet long enough for the pigs to get dry and warm and nurse. After that there is but little danger of their perishing with cold; and in this way, sometimes, a fine litter of pigs can be raised that would otherwise perish. The old saying, "take care of the pennies and the dollars will take care of themselves," will hold good in swine breeding; take care of the pigs and the hogs will take care of themselves. In one case, without pennies you have no dollars, and in the other, without pigs you have no hogs.

FITTING SWINE FOR EXHIBITION OR SALE.

From four to six weeks before the exhibition or sale of the swine they should be put up and become accustomed to being handled, washed, and brushed, which should be done every day or two. After they are brushed dry they should be oiled; this will make the skin soft and pliable and the hair glossy. For this purpose there is nothing better than lard and sperm oil, equal parts mixed. Dampen a sponge or woollen cloth with it and oil them, but do not use too much oil, as it will show, look bad, and cause remarks.

When the weather is hot, they should be kept out of the sun during the hottest part of the day and should not be allowed to wallow in the mud. In case they do, it should be washed off in the evening and not allowed to remain on over night, as it will cause the hair and skin to become rough. Never maim or disfigure, the nose, tail, or ears in any way if it can possibly be avoided. If they have been rung, cut the rings in two and take them out before exhibiting them.

If one wishes to use ear marks, I know of no better plan than the patent ear tag. These should be put in the ears at or before weaning time to guard against mistakes as to what sow certain pigs belong. These tags are numbered, and the numbers should be carefully registered. In putting them in care should be taken in the operation, for they may cause the pig to carry a bad ear, especially if the ear becomes sore.

Some breeders object to these ear tags, as they claim they gather mud, and sometimes are the cause of the ear being frozen, or becoming sore, and use in their place an ear punch, an instrument similar to a leather punch. With this they punch holes in the ears, and thus mark the pigs. When this is done, the pigs should be carefully registered, giving the number

of holes in the ear, their position, and the sow to which they belong.

In order to take them to fairs or exhibitions of any kind, and in order to ship them if sold, each hog should be boxed in a good, strong, but light box, with a small trough or tin vessel in it, to water and feed in. If the breeder is well supplied with cards, showing whose hogs they are, what kind they are, how old they are, how much they weigh, and whether they are for sale, he will save answering a great many questions. Now, one thing more to new beginners. When they have thrown out their card to the public, they must not expect to sell all the hogs that are needed the first year they are in the business; if they do, they are liable to be disappointed. It takes time, energy and a great deal of experience to establish a reputation as a first-class stock breeder who commands respect and patronage.

CHAPTER VII.

SELECTION OF SUBJECTS.

IMPROVE YOUR STOCK—SCRUB HOGS—FIXING THE CHARACTERISTICS OF A BREED OF HOGS—AN ILLUSTRATION OF HOW TO FORM A BREED—MERIT AND PEDIGREE—ROOTS, VEGETABLES, PASTURE, ETC., FOR HOGS—RINGING HOGS—HOW TO HOLD THEM.

IMPROVE YOUR STOCK.

THE advantage of good stock over scrub stock is daily becoming more evident; an incontrovertible argument in favor of the former. This is a pleasant fact to contemplate by those breeding up their herds, and should serve as an incentive to future effort by others who have hitherto refrained from so doing. The improvement in stock throughout the country is marked, but the large increase of purely bred stock, the frequent public sales and the reasonable prices at which they sell, enable men to make still more rapid improvements in the grading up of the herds that cut the chief figure in our meat supply.

In passing through the country now, one cannot fail to note the changes that have taken place in most sections, as regards the improvements in all kinds of stock, and especially swine. People have begun to know the difference existing between a good hog and a scrub. One may occasionally find a person who has made no improvement in his swine, but he is only an exception. He will soon fall into the ranks, for it is evident to anyone that it is as easy to raise a good hog as a poor one, and far more profitable. Purely bred

swine of most all kinds have become so plentiful that it is no longer a difficult or costly matter to procure them, and once procured, they reproduce themselves so rapidly that it is very evident that in the near future the purely bred, or high grades of swine, will take the place of the native, or scrub hog, even in the most remote rural districts.

Other improved stock has made very rapid progress in the last ten years, and no doubt will continue to do so in the future, for the more plentiful it becomes the easier it is obtained, and the more enlightened the people become, the more it will be sought after; but on account of its being more costly, or slower to reproduce itself, it can never make the progress that swine can. Every effort should be made to grade up all kinds of stock as fast as possible. As the use of good males of most all kinds of stock is now obtainable at a reasonable price in most all parts of this country, the people should not be slow to patronize them. By this means it takes but a few years to make quite an improvement in any kind of stock, and the idea that the market will become overstocked with any kind of good stock is all wrong. Tho demand will always exceed the supply.

It does not pay to breed or to feed poor hogs. The hog is a voracious animal, and unless his voracity can be turned to profitable account it is better to have nothing to do with him. The great majority of farmers who breed pigs do so without definite aim toward producing a profitable animal. Some of them have got a nondescript sort of stock of no particular breed, and remarkable only for combining as many of the bad qualities and as few of the good points as it is possible a hog can have. Having come to them as it were as a common legacy, they look upon it as being a bounden duty to perpetuate the race. Yet bad as these hogs are, they have two redeeming points. In the

first place, they are hardy, and have good constitutions; and in the second place they are capable of being rapidly improved at small cost, by crossing them with the modern improved breeds of pure-blooded sorts. Use what breed you will to begin the improvement, if it is only persevered in by those who understand the business, it must result profitably. A good and well bred boar costs money. We will say twenty-five to fifty dollars for a really first-class young one, three to six months old. But one is enough for a whole neighborhood, and if several will club together to purchase and keep one among them, or agree to pay a moderate sum for each sow they may get served, the cost will be small to each.

As to what breed is best to originate the improvement from, much will depend upon circumstances. If the medium-sized hogs are desired, use the Berkshire, Yorkshire, Suffolk, or Essex; those who want larger hogs, giving from three to six hundred pounds when fattened, will find nothing better than the Poland-China, or any of our other improved large breeds. When they have made a choice of any one breed, it should not be changed unless they are thoroughly convinced that they have made a mistake; but everything should be done to improve it, always selecting and retaining the best sows for breeders, and every time boars are changed, try to get a better one.

FIXING THE CHARACTERISTICS OF A BREED OF HOGS.

The time required in which to establish a breed, and the difficulty of the undertaking, depends largely on two things — the number of the characteristics desired to be fixed, and the rapidity with which the class of animals selected reproduce themselves. It is obviously a very much less difficult task to secure the reproduction of one characteristic than it is to secure half a dozen. It would be much easier to produce a

breed of hogs which should be uniform in color, without regard to size and time of coming to maturity than it would to secure uniformity in all these points. The rapidity of breeding is an equally important element. Compare the horse and hog in this regard. A long lifetime would not enable one to do more with the horse than could be done in ten years with the hog; in each case the breeder being confined to his own animals. Before the effects of a second cross could be seen in the case of the horse, the hog breeder, starting with a single pair, could have a herd of hundreds, with a good degree of uniformity. Producing young once or twice a year, and several at each birth, the hog, of all our domestic animals, gives much the best opportunity for selection. Swine reproduce at so early an age, so many at a birth and so often, that in no other field can the student of the science of breeding and the art of selection and crossing so readily note results and acquire information by actual experience. Indeed, with a single sow and her descendants, for a period of five years, an observant, intelligent man may learn more concerning the laws of reproduction and the effects of in-breeding and crossing than with any other variety of farm stock in a lifetime.

Estimating the produce of a single sow at a very moderate rate — one litter a year from the time she is one year old, and that from each of these litters there should be saved three sow pigs, which in time should be equally productive — we shall have, by the time the first sow is five years old, a herd of 1,024 females. These will have been produced at 341 different litters, and the most remote will be five generations from the first dam. But when we consider that it is quite within the limits of possibility that each sow will produce two litters a year instead of one, the number of descendants and the opportunity for observation are materially increased,

as this would give us nine litters from the old sow alone, instead of five, as in the preceding calculation, and the total number of female descendents possible in five years, where two litters a year are produced, counting only three females to the litter, would be 2,683.

If, as is claimed by many, five generations serve to fix any given type with reasonable certainty in any of our domestic animals, it is quite within the range of possibilities for each farmer to create a breed of hogs for himself, in the course of five years. This case of fixing its characteristics, which the hog possesses in so marked a degree, enables any farmer to secure a stock which possesses in a very large degree the qualities he desires. If he will use well-bred boars of the breed he prefers for four or five years, selecting the sows with care, his entire stock will very closely resemble the purely bred animals of this breed. If he wishes, he may produce a new breed, or modify an old one, but in the large majority of cases this will not be a wise attempt, as the improved breeds now equal anything he would probably produce.

AN ILLUSTRATION OF HOW TO FORM A BREED.

Following this I will give an illustration obtained from a farmer, who was a very successful breeder of swine, showing how he improved and modified his common breed of hogs and successfully formed a much more profitable one. This illustration may be of benefit to a great many who are contemplating improving their swine by giving them ideas as to how the work is done. By following these rules any breeder can improve in a few years the most mongrel breed of hogs we have and transform them into a fine and profitable breed by using good judgment and some patience. In talking with this farmer he gave his experience as follows: Some thirty years ago I had what we called the Chester-White breed of hogs.

I took great care in breeding them and was also a generous feeder; by this means I had formed what was considered the best hogs in my part of the country. But they were too large and slow to mature to suit me, as I have always stuck to one system of breeding and feeding. I have always bred my sows so they would have pigs from the middle of February to the middle of March; then I would breed such sows as I wished to keep over again, and get another set of pigs soon after harvest. This first set of pigs I never let go hungry. I would feed them all the corn they wanted on good clover pasture, and by July, or some later, I had them ready to go to market, and generally struck a good one. The other pigs I aimed to carry until the following June, or later, as the market suited me. As to whether I have been successful or not, all I have to say on that subject is, I commenced with limited means and am now worth over sixty thousand dollars. But as to the hogs, as I said before, mine were too large and too slow to mature to suit me. So I began to look around for some way to get a hog that would put on more fat at a younger age. I had heard so much about the Berkshire hogs that I bought a good pair of them and tried them a year or so, but I was soon convinced they did not suit me, for they would not keep still long enough to eat, and then, when turned out in the woods to range, though they would live where any other hog would starve, they would get wilder than deer. Experience in stoock breeding generally brings about some good results. So here is where I struck it; I picked out some of my best, large white sows and bred them to the Berkshire boar. The pigs from these sows were very uneven in size, but out-fed the pure Berkshire pigs, or my old stock of hogs, so that I was convinced I had made one step toward improving my

hogs. I saved some sows from these half-bred pigs that were nearest my idea of a hog, and also retained one of the best boar pigs. These sow pigs I bred to one of my best Chester-White boars, saved the best sow pigs from that cross, and bred them back to the boar pig I had saved. That cross proved to be just the hog I wanted. This breeding I have kept up for over twenty years, guarding against in-breeding too close; such as son to mother, father to daughter, or brothers to sisters. My hogs are always uniform in size and color, being white, with occasionally a black spot on the skin, and are of good size and quick to mature. Then the old gentleman tapped me on the shoulder and said: But let me tell you, my friend, that it took patience and care to get them just right, and it takes the same care to keep them that way. Any one starting in expecting to form a breed of hogs or any other stock, in a cross or two, had just as well not start, for it takes time patience and care. In talking with this gentleman I was soon convinced that he was very partial to the white hog, but could give no particular reason, except that they stood upon their feet better than the Poland-China, and stood traveling better than any other breed he had ever tried or seen, except the Berkshire, and they were too small and wild.

IN-AND-IN BREEDING.

The aforesaid illustration only shows how all our improved breeds of stock are formed by in-and-in breeding, and may serve as an example for those who had never made it a study; for it is only by in-and-in breeding, guarding against too close a cross, or too violent an out cross, always retaining those animals of both sexes for breeders that show the characteristics most desired, that any established breed can be formed. Where no violent out cross is made, and the

families are kept together, and the progeny is not uniform in its characteristics, just that long the breed is not thoroughly established.

MERIT, PEDIGREE AND COLOR.

The time was when the pedigree of an animal alone was sufficient to stamp it as first-class and of superior excellence. Although pedigrees are still adhered to, breeders have discovered the fact that they have been entirely too exclusive in this respect, and that many animals possessing superior merit have been overlooked, because of supposed ignorable ancestry. As if determined to push their own claims, the discarded colts when given the privilege of the turf, forged their way to the front, the neglected heifers filled the pails to overflowing, and the chance pigs attained weight not believed to be within their reach. Acting upon the suggestion that an improvement in stock might be effected by breeding only from animals of merit, though of good blood, I will say from my own experience and from that of others who have come under my observation, never discard a good breeding animal, one that has proven itself such (unless compelled to) for one of a more fashionable pedigree, about which nothing is known. When a change has to be made, try and find another good one that has proven itself equal to, or superior to the one you had, even if it is somewhat aged, as it very often will pay much better than to risk a young one, unless it is an exceptionally good one, and from good ancestors of which something is known.

The greatest evil of some of the fine stock breeders for the past years is, that they have adhered strictly to pedigree and color, and neglected quality or merit. This is especially the case with short-horn cattle, Berkshire and Poland-China hogs. I will venture the remark that they are not as good to-day as they were a

few years ago. The color craze, red with short-horn cattle, and black with Poland-China hogs, and the fashionable pedigree of this stock, as well as with the Berkshire hog, has been detrimental to the breeds. This is being acknowledged all over the country, and is the cause of farmers seeking other breeds. This color craze, gray or fawn color, was originated by the Jersey breeders, when the Jersey boom was first started, but some timely suggestions from some of the breeders that merit was more essential than color, soon put a stop to that, and the butter test took its place. Now, some critic will say right here that the public demands the pedigree and color. While the pedigree is all right, providing it is backed up with merit, I will again venture to remark that the public will not know anything about the color if the breeders do not start it. Any of the purely bred stock is true enough to its color, if nature is left to place it as she sees fit, but it is the quality and merit that want looking after. Nothing will prove this more than the horse. Do people demand a gray, black, or any other color, and a certain pedigree in preference to quality, especially when left to judge for themselves? No, indeed; whereas, they may admire a horse of dark color, yet the horse they will choose is the horse with the largest and best form, or that can pull the largest load, or go a mile the quickest. And the same with cattle or hogs; it is the quality that is wanted, and if the general stock grower can not find it in one breed, he will seek it in another.

ROOTS, VEGETABLES, ETC., FOR SWINE.

Every farmer or feeder should raise tuberous plants for their hogs. The artichoke possesses rare properties as an appetizer and an aid to digestion. It will remove constipation and fever caused by corn-feeding in the winter, and will keep hogs so healty and

vigorous that they will resist disease. The Brazillian and the white French artichoke are the best varities known, and a small patch of them would prove very profitable, as they are an advantage to the hogs and will save many bushels of corn. The value of the artichoke is so little known that I desire to call the farmers' attention to them. They should be planted on good, dry land, and the ground should be plowed deeply and harrowed, then marked both ways with a tree-runner, potato-marker, or in some other manner. The rows should be three feet apart each way. Cut the tubers into small pieces, about two eyes to each, then plant the way you mark first, and cover with a cultivator. As soon as weeds start, harrow well, and, when large enough, cultivate as you would corn. In this way from six to eight hundred bushels to the acre can be raised. After frost has killed the tops, put a fence around a part of the lot, and give the hogs full privilege to "root, hog, or die," and you will be surprised to see how they use the instrument God has given them to unearth the kind of food their nature requires. Forty years ago, when hogs ran out in the wood and prairies, hog cholera was unknown. Thus be wise, and study the wants of this animal, so valuable to the farmer of the West, and supply these wants. This can be done by every farmer, by planting a patch of artichokes in one of his feed lots not used in summer, or near by his lots, and let his hogs have access to them in all the open weather from October to May. For winter use some should be dug and put in the cellar, and if cooked and mixed with meal or bran, they make excellent swill. For this the white French is better, as it is sweeter, has a larger tuber, grows nearer the surface, and is more easily dug. They are also excellent for milch cows in winter. I would not have it understood that artichokes take the

place of corn to any great extent, but they loosen the bowels and keep the hogs in such a condition that a bushel of corn will put on more flesh than when they are fed on corn alone.

NOTE.—I suppose the seed of the artichoke can be had of any good seed firm.

Sugar beets are also valuable for stock, and are easily raised, and can be put away for winter use, when they are the most needed.

On rich soil one thousand bushels can be easily raised to the acre. It wants three pounds of seed to the acre, put in with a drill, rows eighteen inches apart. If on new ground, it requires but little tending to keep the weeds down.

Corn and sugar beets will make shoats fatten faster than any other feed, for we know that corn contains a larger amount of fattening element than other grain, and sugar beets have the same properties over other roots, and the two combined form a great fattening food; in fact, so much so, that if fed largely, they will produce enough fat to be injurious to the hog, especially where intended for breeding purposes.

GROWING PUMPKINS WITH CORN.

Pumpkins are valuable for stock in autumn and early winter, or as long as they can be conveniently kept, though the amount of nutriment in proportion to bulk to be taken care of, and their liability to decay, have led most farmers to discard them, and adopt roots and squashes for succulent food. As a rule, every crop needs all the ground it occupies, and all the air and sunlight available. Corn is a "sun plant," and to shade the soil and lower stalks with the dense foilage of pumpkin vines, must be more or less injurious, even if the latter do not rob the former of any needed nutriment. On very vertile, new soils, with short-stalked varities of corn, in localities where frost is not

to be feared, it may be allowable to plant pumpkin seed in every third or fourth hill, in each second or third row. With favorable weather, the corn will produce about the usual yield, and after the early gathering of the corn, the growing pumpkins thus exposed to full light, will ripen up those pretty well developed. As a rule, let the pumpkins have the whole ground; but still better are the harder fleshed squashes, which will probably supply more nutriment than field pumpkins, whether for man or beast.

The Hubbard squash will fatten more hogs than any corn which could be raised on the same ground, and they will keep through the winter. Plant twenty feet apart each way, which is thick enough, and but little cultivation is required. The crop is easily gathered, no digging or husking being required. The plants are rampant growers, and are out of the way of the bugs within a week, early in the season. From six to eight tons have been obtained from an acre, estimated by one ton to the wagon load.

It seems that of late years the raising of pumpkins and squashes has been greatly neglected by the farmers, and it is now only occasionally that we see a corn field spotted over with golden pumpkins, as in former days. Why is it? Has mother earth so depreciated in quality that she will not raise them any more? Or have our improved corn plows made it impossile to raise them? If these are not the reasons, it must be because the farmer thinks them not worth raising and gathering. I think a great many farmers underrate their value as food for hogs, and fail to appreciate them as they should. Any thing a hog will eat with as much relish as they will pumpkins and squashes, is certainly good for them, and they should occasionally have a mess. It is very seldom that corn-fed hogs will not leave corn if pumkins are thrown to them, and devour

them greedily. This goes to show that they want a change of food, and relish vegetables. When mankind is deprived of vegetables for a long time, they crave and want them, and often sicken and die for the need of them. The hog in this is "like his two-legged brother." Many a lot of hogs has died which a wagon load of pumpkins would have saved if given in time.

RAISING RYE.

Rye is the earliest grass crop that can be grown. If seeded down in the fall it not only gets a good start if the season is favorable, therefore affording a slight opportunity for grazing in the fall to those who are not favored with pastures, but it comes out luxuriantly in the early spring, and affords green material when other grasses are dormant. It grows on the sandy soils as well as on those that are heavy, but thrives best on a fertile, light loam. Rye is an excellent feed for young pigs early in the spring, and every farmer who has no early pasture for them should sow a patch for that purpose. After it becomes too hard for use, it can be plowed under, as it makes a good fertilizer for most any other crop. Healthy swine may be raised very cheaply if only the proper attention is given to the matter of their food and pasture. Every swine breeder should have a piece of clover pasture; yet green rye, oats, millet, Hungarian grass and green peas all make excellent and cheap hog feed. Where a pasture cannot be had, no other crop will make better feed, nor more of it, than green, sweet corn fodder, or a crop of oats and peas mixed. Have these crops planted in a lot next to the hog-lot, and cut and feed to the hogs as needed, but not until they have come nearly to maturity. By planting a second time on the ground which was first relieved of its crop, a constant supply of these provenders can be maintained from the first of July until frost comes.

PASTURE FOR HOGS.

The subject of good pastures for hogs in summer is becoming one of special interest to farmers. So, also, the providing of a supply of roots for them during the winter is beginning to receive deserved attention from the more progressive and successful farmers. The continued and excessive use of corn has long been deemed wrong, both in theory and in practice, although comparatively few feeders ever seemed to have considered how it might be avoided. The light, however, is breaking, and a radical change in the management of hogs, as regards their feeding, seems fast going on. This change, no doubt, will result in a very marked decrease of disease among swine. Among the grasses most suitable for hog pasture may be mentioned timothy, red clover, blue grass, and orchard grass. In timber pasture, where red clover would not do as well, on account of the shade, white clover will be found valuable. The best pasture is one containing several kinds; but it is no easy matter to keep a variety of grasses on the same ground. The more hardy will sooner or later crowd the others out.

The best pasture is blue grass, as it keeps green most all the year round, and affords grass both early and late. Red clover alone is about the poorest pasture there is for hogs. Early in the season it is of too luxuriant a growth, and then it soon becomes hard and woody, and has a tendency to cause constipation. When the first crop is taken off, and the second crop comes up, especially where it is of a luxuriant growth and the weather warm and wet, and hogs are turned in on it, it has the same tendency to cause sickness that an over-feed of new corn has. To guard against this trouble it is best when sowing clover for pasture for hogs, to always mix timithy, or some other grass seed with it.

RINGING HOGS.

My experience in ringing hogs leads me to think it an advisable measure, when rightly done and at the right time. The assertion sometimes made that hogs, if habitually allowed to run at large, will not injure meadows or pastures by rooting when turned upon them, cannot be relied on. They may for a while behave themselves very well. I have known them to roam a pasture for weeks and scarcely turn a sod; when, soon after from some unaccountable reason, they would get to rooting, and in a short time do more damage than many times the cost of ringing them. So I have at last concluded that the safest way is to use the rings whenever hogs are allowed to range where their rooting would be an injury.

I do not advocate the continuous use of rings the year round, nor their use on swine of all ages and sizes. In the spring of the year they are generally the most needed. If hogs that are treated to rings in the spring are still on hand in the fall, it is usually best to remove them, particularly if the hogs are turned on mast, or allowed to follow cattle in feed lots or stalk fields.

It sometimes happens that a valuable brood sow acquires such bad habits as lifting gates or breaking fences. A couple of rings in the nose of such an animal will put her on good behavior more effectually than any thing I ever tried. Also with a sow that is vicious and cross to other hogs; a good ring in her nose will prove to be a wonderful tamer. A stock boar, if inclined to be unruly, should be treated the same way.

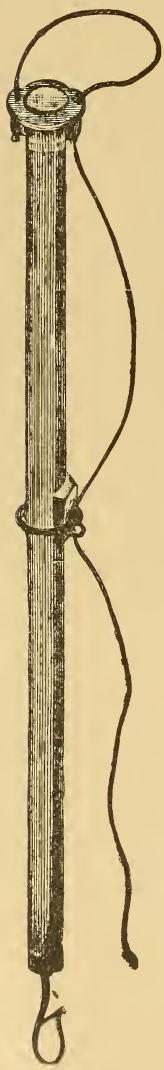
If a sow is cross and abusive to her pigs, take a piece of small wire, a size larger than broom wire, and four inches long. By the use of an awl, insert this wire in the center of the rim of the nose, and then

twist it together; this forms a long probe and will strike the pig before her nose will, which will cause the pig to get out of her way and save itself from a blow. It will also cause the sow to behave herself better than a ring will. I have nothing to say as to which are the best patent rings; they are all good enough, some, perhaps, being more easily applied, or adjusted, to all purposes, and lasting longer than others. I have always used the round or triangular rings. I insert the rings through the partition of the nose, just as a ring is put in a bull's nose, instead of through the rim of the nose. Never use more than one ring in a hog's nose, if it can possibly be avoided, and insert that in the center of the nose, or, as spoken of before. When it is necessary to put in two rings, which is sometimes the case with sows or large hogs, insert them close together, less than an inch apart, one on each side of the center of the nose. By this means one avoids hitting the cords that are on each side of the nose, and which, if the rings are put through, cause the nose to become very sore and painful. The rings should not be set too deep, and see that they close up smoothly where they come together, as the injury of hogs by ringing is very often due to its being improperly done, and by the use of such inhuman rings as horse shoe nails or too heavy wire. Here is another plan to keep hogs from rooting, which I have practiced some, and have seen others adopt with good results: Cut the cords on each side of the nose; they can be observed by pressing the nose down. Use a small, sharp-pointed knife; insert under the cord and cut up. This will take all the power out of the nose, and it will not get sore.

SHOOK'S HANDY STOCK CATCHER AND HOLDER.

For holding large hogs to ring them, or any other purpose, there is no better or simpler plan than

by the use of one of Shook's Stock Machines. This machine is so valuable, cheap and simple to use for handling all kinds of stock, that every farmer can afford to have one, and it is the farmer's choice for the purpose for which it is intended, for the following reasons: First. It is the only invention of the kind that can be converted into several different forms for the handling of different kinds of stock. It can be changed into a bridle, halter, twitch, slip-noose, or lasso for the purpose of handling all kinds of stock, large or small, with perfect security, and without injury. It is also one of the best bull staffs in use.



Second. It is longer and lighter than any other instrument of the kind, being six feet long and weighing less than four pounds, which is quite an advantage on account of the ease and security with which it can be handled. Yet it is cheaper than any other; and is made of the best material, so that it will last for years without repair. In case it is broken, any one can repair it at a trifling cost, owing to its simple construction.

No farmer should be without this machine, as it is a great labor-saving invention, often doing the work, in the hands of a boy or man, that would otherwise require the efforts of two or three strong men. And it often saves personal injury, or the soiling of clothes, which often occurs in the handling of hogs or other stock by main force. It can be had of hardware dealers. Price, $2.00.

DIRECTIONS FOR THE USE OF THIS MACHINE.

Take hold of the staff back well at the small end with the left hand, and hold the rope and staff back of the ring with the right hand. In order to catch and hold a hog, drop the lasso over its nose, or else in the mouth and around the upper jaw; then pull quick and hard upon the rope, and it will close up tight around the nose or jaw, and the ring in the center of the staff will hold the rope secure. A hog thus secured can easily be held while a ring is put in its nose, or its tusks taken out, or for any other purpose. The lasso can be made any size desired for catching calves, sheep or any other stock, and used with perfect safety. In order to form a rope halter or bridle, for the purpose of handling a bad horse, run the lasso out long enough to go over the head of the animal, then reach through the lasso with the left hand, and catch the rope back of the eye of the machine, and pull it through far enough to go over the nose or through the mouth of the animal. To fit it up snug, pull on the end of the rope to take up all slack, and the ring will hold it secure. With this machine thus fit to a horse, it is no trouble to handle it; no matter how vicious it is. The bull staff is formed by using the hook, or snap at the small end of the staff. Around the shank of this hook is a spiral spring which holds a clasp in place; press the spring back, and the clasp will turn to one side and remain there. Now hook the snap in the ring in the bull's nose, then press on the clasp, and it turns in place, and forms a solid hook or snap, perfectly secure, and strong enough to hold any bull.

CHAPTER VIII.

BUTCHERING HOGS AND CURING THE MEAT.

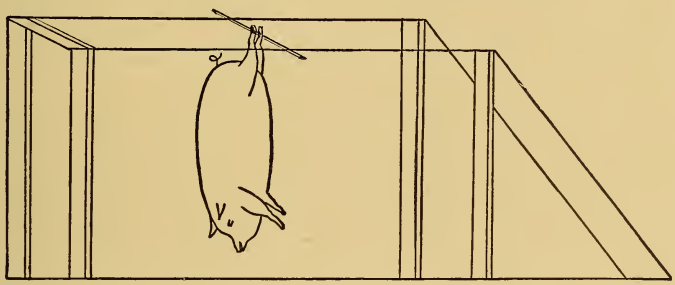
PREPARING TO BUTCHER—RACK TO HANG HOGS ON—A REGULAR SYSTEM—HOW A PIG SUDDENLY BECAME PORK—KILLING AND CLEANING HOGS—PREPARING THE LARD, SAUSAGE, AND PUDDING—PREPARING AND CURING THE MEATS.

BUTCHERING TIME.

WHEN the time arrives to butcher, before commencing, everything pertaining to that day's work should be gotten into good order. Every farmer knows butchering takes all day, and sometimes part of the night, as it comes in the part of the year when the days are short and the weather liable to be cold and bad. Therefore, one should have everything in good order, and have as little other outside work to do as possible. If there is much stock to feed, the food should be so prepared that it can be given to the stock quickly that day. A good supply of dry wood should be hauled up, prepared and put in the dry, so in case of snow or rain, it will not get wet. Then look after the butchering tools, so that they are in good order. The knives, cleaver, axes, and sausage machine should be well sharpened.

If the meat tubs and lard firkins need cleaning and hooping, see to it in time. Get the kettles, scalding tub, hog hook, and gambrels together, so there will be no need to hunt them when they are wanted. The hogs should be inclosed in a small lot or pen, as near as possible to where they are to be killed, for it saves

hauling them so far. If there is no place already fixed to hang the hogs, one had better be prepared beforehand, rather than to wait until the hogs are ready to be hung up, and then fix a temporary one that is liable to fall down and cause trouble. I will here give a description and cut showing how to make the best hog hanging rack I have ever seen for farm use. It is not only strong and safe if well put up, but is the easiest to hang hogs on. Three men can hang on this rack a hog that will weigh six or eight hundred pounds. The cut itself will almost describe the rack.



It is made by setting four posts 4x6, 9 feet long, in the ground, $2\frac{1}{2}$ feet apart one way, and 12 feet the other, outside measure. When finished it ought to be 7 feet high. For the stretchers from one post to the other on which to hang the hogs, use 2x8 joists. On the inside of the posts at the top, cut a notch large enough for the stretchers to rest on. Then spike or bolt them securely to the posts. The back end of the rack can be fastened together by a good inch board being nailed to the posts. The front end has two stretchers, 2x6, and 10 feet long, running from the ground to the top of the rack, and fastened to the top stretchers on the inside, to be used to slide the hogs up on. The gambrel sticks to be employed on this rack must be $2\frac{1}{2}$ feet long, in order to reach from one stretcher to the other, as the hogs hang between them. Where a rack of this kind is desired, from 16 to 24

feet long, there must be two center posts to strengthen the stretchers. The advantages of this rack over any others are: First, if the platform that the hogs are scraped on is put against the ground stretchers, it requires but little labor to slide the hog off of it, upon the rack; second, one half of a hog can be taken down at a time when cutting them up, or they can be cut in halves, in order to let them cool quickly. For a place to clean the hog on, a sled with some good strong boards on it, or a wagon box turned upside down will answer the purpose. For a scalding tub, a large barrel is better than a hogshead, as it does not require so much water, and does not get cold so quick.

A REGULAR SYSTEM.

At all packing establishments, hogs are cleaned and cut up under a regular system. But it is only occasionally that a farmer has any regular system of doing this work, and it is seldom that two persons do it alike. There are some who will kill the same number of hogs, and work them up in about half the time, and do the work just as well as others. Why is this? Because one works under a regular system, and the other has no system at all. Butchering hogs is hard work at best, but if properly managed, a large amount of work and time can be saved, and the work is just as well or better done.

HOW A PIG SUDDENLY BECAME PORK.

The following graphic description as given by Mr. Phil. Robinson in a new book just published, shows how suddenly a pig became pork in a slaughtering establishment in Chicago. I should be sorry to vouch for the precise accuracy of the statement, although I know they do the work very quickly:

A lively piebald porker was one of a number grunting and quarreling in a pen, and I was asked to keep my eye on him. What happened to that porker

was this: He was suddenly seized by a hind leg and jerked up to a small crane. This swung him to the fatal door through which no pig ever returns. On the other side stood a man. The two-handed engine at the door stands ready to smite once, and smite no more, and the dead pig shot across a trough and through another doorway, and then there was a splash. He had fallen into a vat of boiling water. Some unseen machinery passed him along swiftly to the other end of the terrific bath, and there a water-wheel picked him up and flung him on to a sloping counter. Here another machine seized him, and with one revolution scraped him as bald as a nut. And down the counter he went, losing his head as he slid past a man with a cleaver, and then, presto! he was up again by the heels. In one dreadful handful a man emptied him, and while another squirted him with fresh water, the pig, registering his own weight as he passed the teller's box, shot down the steel bar from which he hung, and whisked around the corner into the ice-house. One long cut with a knife made two sides of pork out of that piebald pig. Two strokes of the cleaver brought away his back bone. And there in thirty-five seconds from his last grunt — dirty, hot-headed, noisy — the pig was hanging up in two pieces, clean, tranquil, iced! The very rapidity of the whole process robbed it of its horrors. Here one minute was an opinionative piebald pig, making a prodigious fuss about having his hind leg taken hold of, and lo! before he had made up his mind to squeal or only squeak, he was hanging up in an ice-house, split in two. He had resented the first trifling liberty that was taken with him, and in thirty-five seconds he was ready for the cook.

KILLING AND CLEANING THE HOGS.

Ordinarily, when butchering day arrives, the fatted swine are driven from their pen into the yard. Here

one is caught at the first attempt (possibly), and after much tussling is turned upon his back and killed. After this the herd becomes wild; much chasing, tumbling, and tugging (I trust no swearing) is indulged in, and finally, after human strength has been expended that might have gone far towards sawing a cord of wood, the doomed animal, half dead with fright, with heated blood coursing in his veins, has his throat torn open with a bungling implement, and thrust here and there, often in vain search for the vital current. My dear sir, I plead with you, in the name of humanity, in the spirit of civilization, to avoid this torture of helpless, unoffending creatures by shooting them. A small ball from a rifle or revolver will cause instantaneous insensibility, after which the bleeding may be accomplished without lessening your self-respect. The shooting will cause no commotion in the herd — it does not realize that any killing has been done. When several hogs are to be killed, after the water is hot and everything ready to commence, two should be killed at once, as two can be scalded with the same water as one, and this saves heating water so often. There are some farmers who are experts in bleeding a hog, while others make a very bungled job of it and damage the shoulder. This is a simple operation. When once the hog is down, turn it on its back, use a short, sharp-pointed knife, and place the point in the center of the throat with the edge back. One thrust down and back will reach the vital part; and in drawing the knife out cut the incision some three inches long. This will cause the hog to bleed freely. If much blood, mud or snow adheres to the hog, it should be cleaned off before being put into the scalding tub, as it will chill the water and cause a bad scald. In order to have the water the right temperature to get a good scald, fill the

barrel one-third full of boiling water, then add to this one or two gallons of cold water. This will be hot enough if the barrel is not too cold, but when it is, it may not require any cold water. If a half gallon of wood ashes or a half pint of lye is put in the water, it will cause the hair to slip better. When the water is too hot it will set the hair so it will not come off. In scalding the hog, always scald the hind part first. Keep moving it, turning it over and then draw it out to air and examine to see if it is scalded enough. This is the case when the hair slips off easily. Then turn the hog around, and scald the fore part. (This is the hardest to scald, and care should be taken not to set the hair.) Now, while the second hog is being scalded, the first one should be cleaned, for while it is hot it can be cleaned much quicker than when it gets cold. Clean the fore part first, commencing with the feet and head and then work back. Here is where the lively work begins, and where a corn knife or hoe can be used with good effect to help remove the hair. When the first hog is cleaned hang it up, and then wash and scrape it, and soon follow with the other one. When the intestines are removed, wash the blood out and rinse with cold water. In order to let the hogs cool quickly, split them down on each side of the back bone, leaving them together at both ends. Then by the use of a stick spread them apart in front. Now, the first two hogs are taken care of, and the others follow suit in pairs.

HOW TO CLEAN THE INTESTINES.

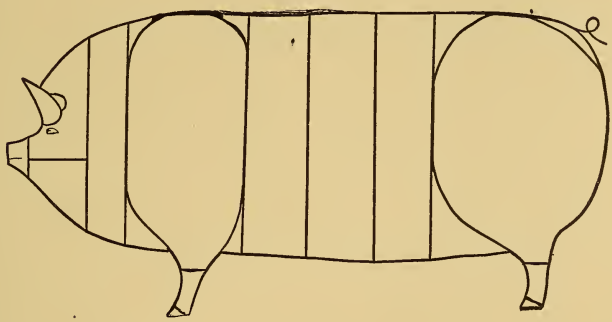
As soon as the intestines are removed, it is best to clean them at once, while warm. This is done by first separating the paunch from the other parts, and then remove the lard. Then divide the large intestines from the small ones; separate the large ones and remove the lard by the use of a knife. The lard can be

removed from the small ones by taking it in one hand and the intestine in the other and pulling them apart. To prepare the small intestines for sausage casings empty them and keep them in hot water while cleaning them, which is done by scraping with a case knife upon a smooth board. If the water gets too cool, pour off a part, and put in some more hot. There is no need of turning the small intestines when cleaning them in this way. For casings for puddings, take those parts of the large intestines that are smooth and straight, turn them inside out, and clean them the same as the others.

CUTTING UP THE HOGS.

When the hogs are all killed, commence to cut them up by taking off the head and cutting it up for such purpose as is desired. When the heads have not been well cleaned, put them in scalding water, and clean them. Cut the head in two on a line with the mouth, take out the tongue and clean it, by putting it in boiling water, which will cause the rough skin to peel off. The under part of the head, or jowl, if not intended to be smoked, can be made into lard, sausage, and pudding, by cutting off the jaws for pudding, the other part for sausage, and the rest for lard. The upper part of the head, except the brains, is not of much use, except for pudding. Cut out the ears and eyes, then split the head in halves, take out the brains, and clean the balance by cutting out the nose-bones. Where the nose is not wanted, cut it off half way back to the eyes. The hearts and tongues, if not wanted for use, can go in the puddings, and one-half of a liver to every three hogs. If the lard is not to be peeled and the rinds put in the puddings, the meat, now prepared, can

be put over to cook and be out of the way. Enough water should be put on the meat to cover it. Now cut up the balance of the hog as follows:



Take out the back-bone, remove the lard, and break the back-bone at every other joint. Cut off the legs above the hocks and knees. Take out the leaf lard, ribs and tender-loins, remove the piece in front of the shoulders for sausage, then the ham and shoulders, cutting the ham round and the shoulder square. Cut off a good strip of the belly and back for lard. Square up the remainder and cut it into pieces of such sizes as are wanted. Then put the meat away to thorougly cool out before being cured. To clean the feet, put them in boiling hot water until the toes can be removed easily. Scrape and wash them thoroughly and they are ready for use.

PREPARING THE LARD AND SAUSAGE.

While some are employed in cutting up the hogs, others may be preparing the lard to render and the sausage meat for use. With a reasonable amount of help and proper management, this work can all be going on at the same time. To prepare the lard for rendering, cut it into squares of an inch or more in size, and as soon as enough is ready to fill a kettle, it can be put on to cook. A half gallon of water should be put in the kettle to keep the lard from burning be-

fore it commences to cook. No more lard should be added to this while cooking, but as soon as done, when the cracklings turn a light brown, take it off, run it through the lard press, and place it in another kettle to cool a little before it is placed in the cans or firkins. Another kettle-full, or even two at the same time, can now be treated in the same way. If the sausage meat is to be ground, it ought to be cut into squares, as by this means it does not become so stringy. Have the meat warm, but use as little water as possible while grinding it, as it keeps better if ground dry.

PREPARING OR CURING MEATS.

To season the sausage so as to be palatable to all, is very hard to do. But nearly everybody will find one of the following recipes to suit: To forty pounds of ground meat, use one heaping pint of salt, one-fourth pint of pepper, five tablespoonfuls of coriander, and three tablespoonfuls of sweet-marjoram. Mix thoroughly, prepare for the table, and it is good enough for a king.

Another: For the same amount of meat, use the same amount of salt and pepper, and one-half pint of sage. To this can be added two tablespoonfuls of Summer Savory, if liked. When the sausage is not put in casings, it can be made into cakes and cooked ready for use, then packed in jars, always pouring over each layer the fryings until the jar is filled. Then heat and pour over them enough lard to cover them. In this way they can be kept until quite warm weather. When they are put in casings, they can be prepared in the same way, or hung up and let dry and then smoked a little, which will improve them, but too much smoke makes them bitter. Puddings should be seasoned while grinding the meat, to ten pounds add three good sized onions; then mix with this four tablespoonfuls of salt and two tablespoonfuls of pepper;

stuff them, and then put them in the same water or juice that the meat was cooked in. Bring to a boil, take out and dip in cold water. Put them in a vessel to cool, and when they are cool, they are ready for use.

The back bones and spare ribs can be salted lightly, packed in a jar and put where they will keep cool, or else a weak brine put over them. Side meat should be cut in strips of three or four to the side, packed edgewise, with the skin side out in a large stone jar and pickled pork made of it. Brine for pickled pork, should be as strong as possible; it ought to be strong enough to bear up a good sized potato. Make it by stirring into warm water as much salt as it will dissolve, and when cool, pour it on the meat. In packing the meat put some salt in the bottom of the jar when commencing, and also add an ounce of saltpetre to twenty pounds of meat, distributed through the meat as packed. If it begins to sour, take it out of the brine, rinse well in cold water, cleanse the vessel well with hot water, re-pack in brine. When the brine seems thick and ropy, the meat is not doing well and must be looked after. When the sides are wanted for bacon, they can be cured with the hams and shoulders.

For a dry salt cure, as soon as the meat is cooled out one should begin immediately to salt it. A clean oak or molasses barrel is the best to use. Cover the bottom with salt, and, commencing with the hams, the shoulders and the sides last, put each piece in a tub of salt and rub both sides thoroughly with it. Pack in the barrel as closely as possible. Put plenty of salt between the pieces and layers of meat. When packed, leave three weeks and then take it out and repack it. Leave three weeks more, take it out, rub well with black pepper, hang up and smoke. Use corn cobs, green hickory, or sassafras wood, taking care to

have smoke, but not fire enough to make heat. When smoked enough, which will take from five to ten days, take down, wrap in paper and put in a muslin sack, tie tight and hang up in a cool, dry, dark place.

A quick sugar cure: For one hundred pounds of meat, take one quart of salt, one pint brown sugar, three tablespoonfuls of black pepper and two tablespoonfuls of saltpetre; dissolve the saltpetre in hot water, and pour over the other ingredients; mix well and rub thoroughly, and leave it lie thirty days. Look after it occasionally, and rub the preparation over it, then hang up and smoke.

The worms in meat are caused by a small black bug, and not by a fly, as some suppose. Meat should always be sacked as soon as smoked, for these bugs appear very early in the spring, frequently in February or March.

Brines for pork and beef: To one hundred pounds of meat, take ten pints of salt, five pints of brown sugar or New Orleans molasses, two ounces of soda and one ounce of saltpetre, with enough water to cover the meat. Mix the salt and sugar, rub the flesh side of each piece with it, and pack in the barrel, having first covered the bottom of the barrel with salt. When the meat is all in, make a pickle of the remainder, as follows: Put the salt and sugar in water, dissolve the soda and saltpetre in hot water, add it to the brine and pour over the meat. Put on a sufficient weight to keep it down, and leave in for six weeks. Then take out, sprinkle with black pepper and hang up to smoke. Brine for beef is made the same way, except to use two pints less salt. If the brine gets thick or ropy, boil and skim it, let cool and put it back. The pieces that are intended for dried beef must be taken out in three weeks, and cured by drying or smoking. The others must be kept in brine.

Another: To one gallon of water take one and one-half pounds of salt, one-half pound of sugar, one-fourth ounce of saltpetre, one-half ounce of potash. Omit the potash unless you can get the pure article. Druggists generally keep it.

In this ratio the pickle can be increased to any quantity desired. Let these be boiled together until all the dirt from the sugar rises to the top and is skimmed off. Then throw it into a tub to cool, and when cold pour it over your beef or pork. The meat must be well covered with pickle, and should not be put down for at least two days after killing, during which time it should be slightly sprinkled with powdered saltpetre, which removes all surface blood, etc., leaving the meat fresh and clean.

To keep hams: For one hundred pounds of meat, take eight pints of salt, two tablespoonfuls of saltpetre and four gallons of water; put the hams in this pickle, keeping them well under the brine; in April, take out, drain for a few days, slice as for cooking, fry nearly as much as for table, and pack in stone jars. When full, put on a weight and leave stand until cool, then pour over the fat fried out. Prepared in this way, they retain the ham flavor without being smoked.

If these recipes are strictly followed it will require but a single trial to prove their superiorty over the common way, or most ways, of putting down meat, and they will not soon be abandoned for any other. The meats are unsurpassed for sweetness, delicacy and freshness of color.

"Bad dinners go hand in hand with total depravity, while a properly fed man is already half saved."

CHAPTER IX.

HOUSES AND TROUGHS FOR SWINE.

HOG HOUSES ARE NECESSARY—FIRST DESIGN—SECOND DESIGN—THIRD DESIGN—FOURTH DESIGN, A PORTABLE HOUSE—TROUGHS FOR SWINE.

HOG HOUSES ARE NECESSARY.

HOUSES or pens for swine are, as a rule, indispensible to successful swine raising. Their use is so often needed at all times of the year and for so many different purposes, that after a person once builds a well arranged hog house or set of pens, he will wonder how he has done without them so long. There are many farmers who think it so costly an operation to build a hog house or some pens, that they never commence them. That is very often a mistake, for most farmers could build themselves a very comfortable hog house or set of pens at a very small expense, except for the labor, and that can very often be done at such times as they have no other urgent work to do, and therefore the cost would be very light, especially when compared to their value. In order to show how this may be done, the author will give several different designs or plans from which any one can choose a plan to suit his surroundings.

In building a structure of any kind, it is always best to have a definite plan, and aim to adopt it exactly to your wants, as far as practicable. A little forethought in choosing site, determining dimensions and arranging details before the building is com-

menced, will accomplish much for future convenience. Changes from original plans are very expensive, cause delay, and are often unsatisfactory. These rules will hold good in building pens for swine, as well as for other buildings. The comfort and requirement of the stock and the storing of food and supplies must all be taken into consideration. The first thing to decide on is always the location. Sometimes this is hard to do, as there are several things to be taken into consideration. The other farm buildings may be built in such a way that it is difficult to choose a site which will make the house or pens convenient to use, and yet far enough away from the dwelling. If a proper place is chosen, the lots joining the building can very often be formed without the use of very much fencing. For these reasons, before one attempts to build, the work ought to be the subject of careful study. Any farmer who intends erecting buildings of a costly nature, would do well to spend some time in examining good buildings belonging to other farmers, or in studying plans which are accessible in books or papers. A house or set of pens for swine should be on the highest ground attainable within the desired place. The point to be preferred is toward the south. The next best is toward the south-east. It should be so built that it can be well ventilated and cleaned, and also admit the light and warmth of the sun. It should have lots so attached that the hogs can have access to them for exercise and air. Whatever the plan, in the first place such houses must be dry. As the hog in winter spends a good part of his time in his bed, it should therefore be a comfortable one, as comfort is essential to the contentment and thrift of all animals.

The bed should be dry, warm, and well ventilated. A dirt floor for this department is best, and it should be separate from the feeding room. A dirt floor is

warmer than one of boards, and becoming rounded out fits the shape of the animal, and it rests much more comfortably. Hogs that sleep on a board, brick or stone floor often have lumps raised on their limbs, and they frequently become sore and painful. In order to have a dirt floor dry, it should be raised considerably above the surrounding level.

The sleeping room should be tight and warm as possible in cold weather, and have means of cleaning out and ventilation when moderate, and should at all times be supplied with clean, dry bedding. Leaves, prairie hay or corn stalks, make good beds. Straw will do, but must be changed often, as it wears out fast and is very liable to become damp. For a feeding department, a pen on the south or east side of a building, with a tight floor sloping a little from the building, will answer every purpose.

Adjoining this feeding floor and the sleeping department, also, if possible, there should be a manure pit or lot, so that the cleanings of both places can be thrown out. When feeding time arrives, the hogs should be compelled to pass through this lot and held there a short time to make their discharges before passing upon the feeding floor. Finally a supply of good water troughs and water, and a crib of corn, all arranged for convenience, are essentials not to be overlooked.

FIRST BUILDING DESIGN.

I will give first a simple and cheap plan for breeding pens. The draft is only designed to give a general idea of the arrangements, which are simple, and may be varied to suit the convenience of almost any farmer. The cost, except the labor, could be made light. The building can be made twelve feet wide and of any length desired. The pens should be 8x8, which will leave an alley or passway under cover four feet wide.

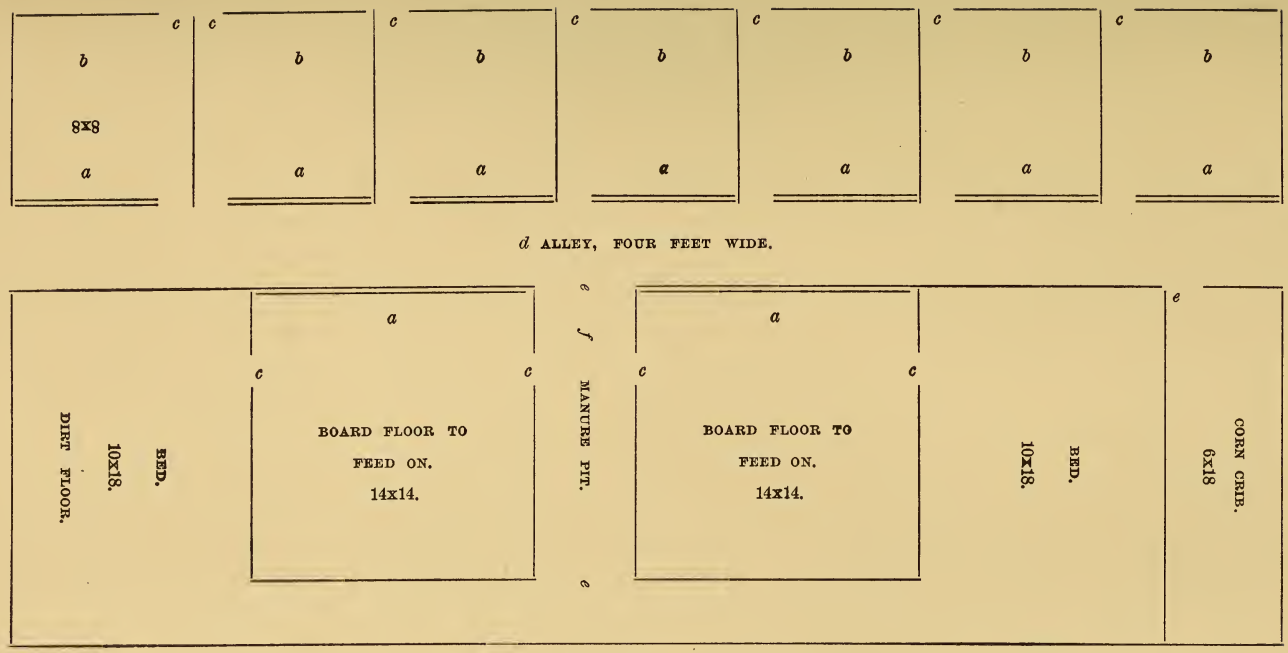


DIAGRAM OF BUILDING. (Fig. 1)

a a, Troughs. *b b*, Pens. *c c* Doors for Entrance and Exit of Hogs. *d*, Alley four feet wide. *e e*, Doors and Gates, for entrance to Crib and Pens. *f*, Manure Pit.

There should be a door to each pen, 2x3½ feet in size, to accommodate large sows. Unless the building is unnecessarily high at the back part, this door should be hung. Where the building is high enough, a drop door can be used. If possible, each pen should have a lot attached to it for the use of the sow. At the front end of each pen, cut a door large enough to allow the pigs to pass in and out. This can be closed by a sliding door, and so arranged to suit the size of the pigs by raising it and holding it by a pin. By this means the pigs can be fed in front of the pen by themselves. The partition between the pens should be so arranged that they can be swung up out of the way, or taken out, thereby throwing two or more pens into one, forming a sleeping or feeding place for several hogs. This building should by all means face the south or east. If four feet high behind and eight feet high in front, it will do, or it may be higher if wanted. The front part of the pens for 3½ feet high should be boarded up tight, also the ends of the building and the back part, all but the doors. Boards 16 feet long are the right length. They will close up two pens in front, or, cut in two, will form the partitions, and will cut to a good advantage in boarding up the back part or to form the doors. They are also of the right length for the roof, where boards are to be used, which make as sood a roof as is necessary.

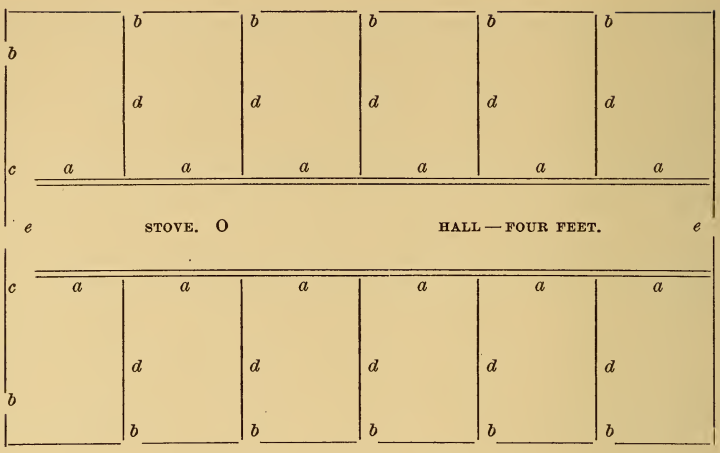
After boarding up three and a half feet of the front part of the pens, the upper part can be closed by falling doors, one for each pen, hung above by hinges or by a 2x4 piece set in the uprights, by rounding the ends and boring holes in the posts. When these doors are down they ought to close up the open space tight, or when swung up they will be out of the way so as to admit the sun and air. This should be done at all times, except in cold, stormy weather. The pens

should be provided with a smooth, tight board floor, so as to keep out the cold and save the feed; and it is a good plan to place, at the back part of the pen between the door and partition, a shelf six inches wide and eight inches from the floor, for the pigs to get under so the sow cannot lie on them. At the ends of this pen corn-cribs of any length desired can be built, with a ten-foot passway between the pen and crib. This can have a dirt floor and be used for hogs to sleep in. In front of this building, and extending in the same direction, can be formed a feed-lot for other hogs, with a feeding-floor, manure-pit and a sleeping apartment at one end, or a corn-crib, sleeping-place, feed-floor and manure-pit. In forming this second lot, if the corn-crib and feeding-floor, etc., are at one end, the other end of the lot should be open.

In forming the first set of pens, where lumber is high, they can be covered with prairie hay or straw; the back part can be made to do for a fence and banked up in the winter with straw or corn-fodder, and the doors and lots formed in front of the pens. When there is no board floor put in the pens, they should be filled with good clay six or eight inches deep, then looked after often and kept dry and clean.

At the end of the alley an elevated walk can be constructed, sloping from the alley out, and of the right height at the back end to suit a wagon when backed up for the purpose of loading hogs. The hogs can be turned into this alley-way and loaded into the wagon. A light board shield that can be carried easily should always be carried behind the hogs when loading to keep them from running back.

The drat, (fig. 2) is similar to the first, except that it has a double set of pens constructed alike with an alleyway between them. This makes a building twenty feet wide, or wider if liked, and any length desired, and



SECOND DESIGN. (Fig. 2)

Pens, 8x8, 8x10. *a a a* Trough. *b b b* Doors for entrance and Exit of Hogs. *c c* Doors opening from Pens into the Hall, which, when both opened at once, fasten together and close the Passage into the Hall. *d d* Movable Partitions. *e e* Doors for Entrance to Hall.

has to be roofed both ways. If well built it can be made very comfortable in cold weather by the use of a stove, which is an important feature should a cold snap occur when pigs are expected. The doors at the ends of the alley-way can be made in two halves, in order to have the upper half open for ventilation when wanted, and there can also be a window over the doors to admit light.

The pens on each side at one end of the building should have doors two feet wide, which should open into the alley. These, hooked together, form a passage-way from one side to the other. When partitions are out, both sides can be used for feeding, or one side for feeding and one for lodging. Partitions can be stowed away overhead and replaced when wanted for sows. This building can be built on a cheap plan, or made more costly if so desired. According to the design as here given the pens should be set on stone piers, about $1\frac{1}{2}$ feet high; sills, 8x8 inches; joists, 2x8; plates, 4x4; rafters, 2x4, two feet apart; roof, $\frac{1}{8}$

pitch with two good ventilators in peak and right distance apart for appearance. Seven feet from top of sill to top of plate. Stock board fourteen feet in length, cut in the middle, can be used for the sides; battened all around; sealed up inside with common lumber to bottom of windows; tar-paper used on sides and roof; two-inch plank for floor; shingled roof. This comprises about all needed for a fine structure.

At one end of this building grain bins and a feeding room can be formed if desired, with a steamer or stove of any kind to cook food or heat water. Or it can be built one and one-half stories high, with a granary overhead at one end, and a place for bedding material at the other, which would be of an advantage in cold weather to keep the pen warm.

THIRD DESIGN.

This draft or plan is very much like the last one, except that it has a main floor at one end to prepare the feed and is intended to be either one or two stories high. The diagram will explain the building.

These diagrams, rude as they may seem, will no doubt be plain enough to give any one an idea how these pens are constructed, and enable him to build a house or set of pens to suit his wants. The doors at the back part of the pens, if arranged to raise and fall in opening and closing, can be opened and shut by the use of a small pulley over the top of the door and a rope reaching from the top of the door over the pulley to the alley way.

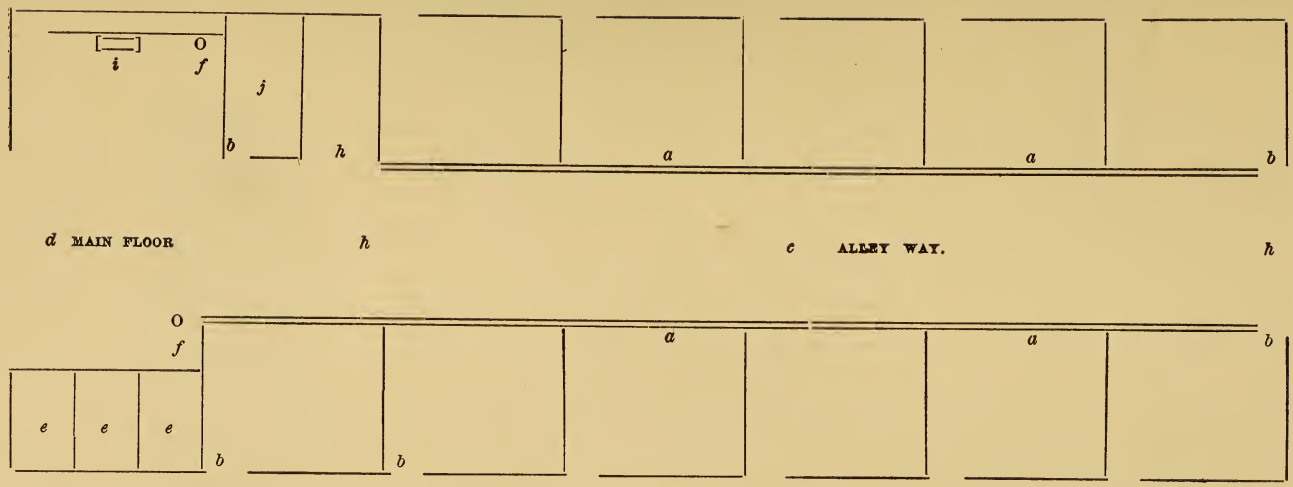
NOTE. — When a hog house is built up off the ground, which is the best way to build them if possible, it should be well banked up in the winter to keep it warm, and the dirt or other material should be removed again in the spring so as to admit the air. By this means it can be made more comfortable and healthful.

A BATH BOX.

The box marked *j* in the diagram is 4x8 feet and a foot or more deep. It should be made of two-inch plank and water tight. The end next the alley way must be made slanting, and have some slats fastened on it on the inside some three inches apart to keep the pigs from slipping when going in or out of the box. One side should be set against the partition, and the other side can have some movable boards on top of it, held in position with slats at the end, and high enough so that the pigs cannot get over. The box is the same length as the pen. The end next the alley way must have a door or gate to open into the alley. After the pigs are once in the box, this can be closed to keep them in. A light, movable walk, for this end of the box, for the pigs to go upon, is also necessary. By turning the pigs into the alley way and going behind them with a slat frame about as wide as the alley, they can be made to walk into this box without any trouble for the purpose of washing them.

In this way half a dozen or more pigs can be washed at a time and then turned out and another lot put in. As soon as through, the water ought to be drawn off which can be done by having a hole in the bottom of the box. In the winter, or any other time, this box can be used to mix feed in, and in that way made to answer two purposes. The old saying, "What ever is worth doing, is worth doing well," will hold good in washing pigs at times, as well as feeding them.

Swine seek their wallow of water or mud only to allay their most uncomfortable heat of body. Therefore they need, in hot weather, a shallow bath in which to cool themselves and cleanse their skin. This plan of bath is so simple, that, in any convenient hog house, it can be adapted for a large or small lot of



DESIGN FOR BUILDING. (Fig. 3)

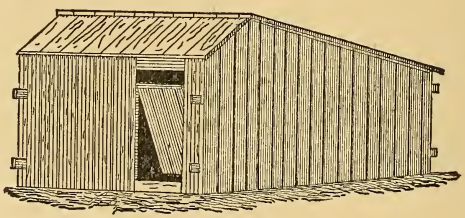
a a, Troughs. *b b*, Doors for Entrance and Exit of Hogs. *c*, Alley way. *d*, Main Floor. *e e*, Feed Bins. *f*, Swill Barrel. *g*, Stairway. *h*, Doors. *i*, Stove, or Steamer. *j*, Box, to be used for washing hogs in summer.

pigs at little expense or labor. A bath box similar to this can be made at a convenient place outside and supplied with water and the pigs will not require any teaching to avail themselves of it.

A box for this purpose should not be over eight or nine inches deep. It can be of any width or length desired and should be put in the ground, bedded in puddled clay to make it water tight. Plank or gravel put around it, is all that is needed to prevent mud.

A MOVABLE PIG HOUSE.

A light portable pig house, large enough to accommodate a brood sow, is often very convenient. It can be taken into a field, grove or grass lot, at any time to accommodate a favorite sow and pigs, or some nervous sow that does not do well when housed close to other sows and pigs, or where she is disturbed. It also comes handy to set in a lot to shelter a boar, ram, some choice pigs or poultry for a time. I will describe how to make a house of this kind, as given by L. N. Bohman. The cut represents the house described, except that it has a sky-light to admit the sunshine in cold weather, which is very beneficial to young stock. Any farmer can at a very small expense build a few houses as thus described, which he will find very useful at almost all times of the year.



HOW TO MAKE THE HOUSE.

Provide four scantlings, 2x2, 12 feet long, two scantlings 2x4, 12 feet long; fifty feet of flooring for roof, and seventy-five feet of flooring for sides and

ends. Let the flooring for the roof be the best, free from knots and windshakes. Cut four rails or nail ties, 2x4, 6 feet long, for the back and front. Now cut siding enough for the back, 3 feet long, and then two boards one foot wide, $4\frac{1}{2}$ feet long, for the front. Nail two of these boards to the flat side of two of the rails above named, letting the outer edge of each board project one inch past the ends of the rails, and have the rails flush with the ends of the boards, taking care always to put the siding square with the rails. The bottom rail, on edge, keeps in the bedding, and is not too high for sow or pigs to get over easily. For the back, nail the three-foot boards to the two-inch face of the rails, letting top rail be at the ends of the boards which project one inch at the ends of the rails, and the bottom rail be eight inches from the other ends of siding, which when set up allows the bottom rail to prevent the sow from crushing pigs against the side.

After the siding is nailed as above, make mortises 1x2 inches just under the rails of the back, and two inches from the edges of the boards. In the front make the mortises 1x2 above the bottom rail, and the top mortises opposite those in the back. The front and back are now complete.

Cut four rails, 2x2, $5\frac{1}{2}$ feet long, and make a tenon, 1x2, 3 inches long, by cutting into the rail one inch and ripping back to the shoulder, which makes the tenon on one side of the rail. Draw-bore these tenons with a five-eighth bit, and put them into the mortises of the back and front, so the outside of the rail is flush with the siding at the front and back; put in the drawpins and the frame is complete.

Now cut the siding for the two ends and nail it to the rails as they stand, and you will have no trouble in taking apart and putting up again. Draw a line from the top of the front to the top of the back, and

saw to it for slope of the roof. This done, cut three slots, 2x2, for rafters to rest in, one notch six inches from the front, one three inches from the back, and the other notch half way between these two. Take three of the rails, 2x2, 6½ feet long, left after cutting the four side rails, and lay in these notches so they project three inches at each end. Saw the roofing to project eight inches at the rear and three inches in front. Lay this flooring for the roof carefully and paint each joint as laid. When done, paint the roof well. It will pay also to paint the house with oil and Prince's Brown, which is cheap and lasting. The front of this house is now open, 4 feet high, less 8 inches, the width of the rails. The closed sides should set north and west, to exclude cold winds, and the open front face the east and south, to admit sunshine.

We have a movable front and swinging door to close all up if a sow is to farrow there in early spring. The movable front is made by nailing the boards to two-inch battons which must fit between the two front rails, and project one inch at one side, so as to catch within the siding. On the other end of the battons we have a button on each to catch the upper and lower rails. By swinging a door in the remaining space the house is closed, and there is complete protection against storms. We use these movable fronts in early spring until the pigs are old enough to endure the cold, when the front is taken off and laid away. If the house is set up on a dry spot where the water will not run under, or if a trench is cut behind for the drip of the roof to run off, the inmates will be more comfortable than in any of our big houses.

Each spring and fall we take these houses down and whitewash inside, and never have a new litter begin life in the old filth of their predecessors. With a clean house, on a clean, fresh sod, the young pigs

start life without being handicapped by disease. The sow should become accustomed to the house two weeks before farrowing, and the swinging door should be kept open. The night she is to farrow it may be closed, and then the pigs are safe from any storm. A handy man can make two of these houses in a day, and the cost of material does not exceed $2.50 each.

The above description is for a house without the skylight. The sash and lights cost about $2. In bright, cold, or windy days, in March or April, the glass lets the sunshine pour into the bed, which the pig enjoys. We cannot get too much sunshine for the pigs in the spring of the year.

These movable pig houses will be found most convenient on small farms where permanent hog houses are not provided. To the tenant who wishes to give his pigs better care than the quarters of the rented farm afford, they will be found of especial value, as he can move them as he does his implements and stock. To move from one lot to another, a sled may be slipped under, or the house can be taken down by removal of the pins, and placed in a wagon, or carried piece by piece by one person. On flat land, where drainage is poor, it will be well to make a floor of inch boards, cut so that the pens set down over it. This keeps the floor perfectly dry. The floor should fit the house, so that there will b no danger of a pig's foot or leg being caught between the floor and house. In order to prevent killing the grass and destroying the sod, the house should not be allowed to stand long in one spot, but moved often to keep the soil and grass fresh. With clean beds, in clean houses, on clean sod, we may hope to raise healthy pigs, if fed judiciously and bred for constitution rather than for color and fat. These houses will be found more useful, convenient, healthful, and less expensive than large hog pens.

TROUGHS FOR SWINE.

Every farmer in this wide land of ours, from ocean to ocean, is interested in hogs. No well-regulated farm should be without them. They fill a niche in mixed farming that no other animal can supply. They largely subsist on stuff that would otherwise be wasted. They are economizers, benefactors, and the poor man's friend, as it takes less means to stock up with them, and they make quicker returns than any other stock. The old saying that "Swine is King," is a true one. But if you are opposed to raising hogs for sale, at least try and keep a few pigs to consume the waste. It will pay to do so.

The trough is as essential as the breed, and should be well filled. The breed is the machinery, and the trough supplies the raw material for manufacture.

Since information on making troughs for swine may be of value to some of the readers of this book, I will endeavor to explain how to make a few troughs that will be found practicable to use. First, the old log trough, made by squaring up a piece of timber, 9x12 and of any length, and hollowing it out by the use of an ax or foot adze, is a good stationary trough, for the hogs cannot upset it, and, if made of good timber, will last for years. A trough similar to it can be made by spiking and bolting together three two-inch boards, with ends well set in. Light troughs for pigs or for general use, where they are to be lifted about, can be made in the same way out of six-inch fencing boards. To keep hogs from crowding one another, upright pieces can be fastened on the sides about a foot apart; if set against a fence or in a pen, only one side should have the pieces. The hogs can be kept out of the trough until the feed is put in by means of a wide board, or two put together with battons. It should be wide enough so one edge can rest on the edge of the

trough, or on slats put across the trough, and the other edge fastened to the pen or fence by means of straps or hinges; this board must be in a sloping position, the board or shute that carries the swill into the trough being under it. When the hogs are wanted in the trough, raise the board by use of a rope or strap fastened to the outer edge of it and fasten it up. As soon as the hogs are done eating it can be lowered again; in this way the hogs can be kept out of the trough and it can be kept cleaner than when they have free access to it all the time or exposed to the weather. The eves-trough, made by nailing two boards together edgewise, of any length, width or thickness, and then nailing on or setting in end-pieces is a common and handy trough. Large troughs made this way can have a wide board or two narrow ones, running lengthwise in the center of the trough and braced by pieces from the edge of the trough to them, to keep the hogs from crowding or getting over the top. Troughs for small pigs should be made low and nearly square, as more pigs can get to them, and they cannot be upset; they are also easily cleaned. Oak lumber is the best to use to make troughs out of, as it will last longer and hold the nails better.

CHAPTER X.

PREVAILING CAUSES OF SWINE DISEASES.

WHAT CAUSES CHOLERA, SWINE FEVER—ITS PREVAILING LOCAL CAUSES—NO BREED CHOLERA PROOF—COMMON ERRORS IN FEEDING—WHEAT STUBBLE PASTURE—CONFINEMENT, BAD FOOD AND WATER—STRAW STACKS, MANURE HEAPS AND BARNS—TRICHINAE IN HOGS A DIFFERENT SYSTEM NEEDED—INFECTIOUS AND CONTAGIOUS CHARACTER OF CHOLERA, SWINE FEEVER—DANGER ARISING FROM RUNNING STREAMS OR POOLS—DANGER IN EXPOSURE OF DEAD HOGS—THE PERIOD BETWEEN EXPOSURE AND THE ATTACKS.

HOG CHOLERA, SWINE FEVER.

WHAT causes hog cholera or swine fever? is a question which has been often asked, and for which many answers have been proposd, but among the hog-growing people of this country, it is as far from solution as ever. While certain theorists and their advocates talk "filth" all the time as its cause, others unmercifully condemn the improved breeding of swine. The farmer knows there is something in this when carried to the extreme, but he is often puzzled to know why his hogs get sick, when kept in clean quarters and not purely bred, while his neighbor's purely bred hogs are in good condition; and, on the other hand, it not infrequently occurs that the farmer who keeps purely bred hogs loses his, while his neighbor, owning native bred hogs, has his herd in a thrifty condition. In studying the causes of this epidemic, too much attention cannot be given to the local causes, as well as the artificial condition of the patient. It is

true, when a rapid growth has been attained by artificial means, we lose in vitality, hardiness and constitution. This is especially the case in the improved breeds of hogs, which now weigh as much at nine months as the old hardy breeds did at eighteen. Instead of roaming at large, unlimited by field or pen, as the old native breed did, and maturing more slowly, they have been subjected to confinement, fed with corn, cooked food, distilled or other slops, etc., which were entirely unknown to them in their native state, thus opening up the way for hog cholera and other fatal diseases. This cause has also been increased by inbreeding too closely or breeding from too young or runty and inferior animals. To obviate this too much attention cannot be given to the selection of thrifty and well-matured animals as breeders, and treating them as near like nature as possible.

NO BREED CHOLERA PROOF.

No breed, however, is exempt from this disease. Even the "Hazel Splitter" with all his vigor of constitution could not resist taking this disease when exposed to it in its epidemic or contagious form. The representation that any improved breed of hogs are cholera proof is a fallacy. It is true, the better constitution a hog has, the better fortified he is against such epidemics. Hence a hog, forced in growth all the time, is more liable to disease, than one grown more slowly, because its digestive and other organs become impaired and its ability to resist the attacks of disease is thereby lessened.

The present practice of raising swine artificially by the use of such stimulating foods as will secure a rapid growth and quick development, is the most fruitful cause of disease among swine otherwise well cared for.

COMMON ERRORS IN FEEDING.

Unquestionably many healthy hogs are made sick and die, by the thoughtlessness of their owners in suddenly changing from dry feed to green corn. The vast amount of saccharine matter taken into the stomach of the animal, impairs its digestion, and on failure of assimilation the food ferments and sets up an inflammation in the stomach and bowels which either produces an active diarrhea or severe constipation. Both these conditions are often noticed in a herd of hogs at the same time, and apparently arising from the same cause.

The same effect is produced on hogs when taken from short dry pasture fields, where they have been kept for some time, and turned into a stubble field where there is a rank growth of clover, or into a clover field, where the second crop is growing rank. The disastrous effects of these changes are more easily noticeable if the change be made during a warm, wet time, as under such circumstances fermentation takes place in the stomach of the animal more quickly than at any other time. Another fruitful cause of sickness from which farmers suffer greatly is allowing hogs to run in matured clover fields and feeding old corn, or not feeding at all. The effect noticeable in this class of cases is almost universally a constipated condition of the animal. The same fevered and constipated condition is noticeable when hogs are shut up in pens, or lots, and fed old dry corn in large quantities, for the purpose of fattening.

WHEAT STUBBLE PASTURE.

Another dangerous practice which causes the same trouble, is that of turning hogs into a wheat field, in a dry time, particularly so when the herd is small or the field very large, and the amount of wheat left on the ground in harvesting is considerable. The hogs begin

eating the dry wheat at once, and continue just as long as they can find it, unless they get sick before it is all eaten, which not infrequently occurs. The dry wheat, when taken into the stomach without proper mastication, is almost certain to clog the stomach, and remain indigested, producing a bilious condition of the animal, resulting in fever and constipation. Practical demonstrations have proven that wheat should never be fed to hogs unless ground, soaked or cooked.

The farmer who is fearful of having his fields rooted or torn up by his hogs, is careful to put rings in the nose of each pig as soon as weaned, thus depriving it of a taste or smell of fresh earth, and the use of an instinct which teaches it in bilious attacks to search for bugs, worms, and other insects as well as roots or vegetables, the natural excitants of the stomach, liver and bowels. He never once thinks of the necessity of furnishing the animal an artificial substitute for these. Dr. Koch, an eminent German scientist and a standard authority on cholera in the human species, says: "Cholera will have but little effect among those who keep the digestive organs, and the kidney and liver in a healthful condition." Following this suggestion of Dr. Koch's, the author has, by repeated experiments, practically demonstrated that swine are subject to the same physical laws as the human race respecting the administration of medicine for the prevention of diseases. And by giving attention to the local condition of the animal and furnishing it with proper remedies, if administered in time, not only will the diseases arising from local causes be removed or prevented, but exposure of the herd to swine fever, cholera, however contagious, will not result disastrously.

CONFINEMENT, BAD FOOD AND WATER.

Confining hogs in a small lot or pen and compelling them to drink stagnant and filthy water, and in the winter season, ice or snow water, or scanty feeding, or dry corn, or musty, moldy and unwholesome food, causes worms in the intestines of the animal, which most generally produce unthriftiness, constipation and disease; such treatment will sometimes produce diarrhœa or other ailments of the digestive organs. The foregoing illustrates the common errors in feeding hogs, which have resulted in the disease called cholera or swine fever. Aside from the errors in feeding which I have briefly enumerated, there are other causes of disease which frequently occur which I will mention: First, allowing hogs to run in fields along streams, or in bottom or low lands during wet seasons, when decaying vegetable substances are throwing out their poisonous miasma. Many thus contract disease similar to malaria fever, which, if neglected, may and frequently does become fatal. A timely application of proper remedies which will act upon the liver and kidneys without irritating the digestive organs will almost invariably relieve this difficulty, and it does not require close attention on the part of the feeder to discover this condition of the animals. Second, the habit of turning hogs into a wood lot in seasons when there is a large quantity of oak mast, is very dangerous, and not infrequently results in the death of a portion, if not all the herd. It may be inquired, why did not the hogs of "ancient days" die, when they had nothing else? The reason is plain to a practical observer, and is the same as before assigned. The "ancient hog" was by nature calculated to root for such things as his system required, such as roots, insects, earthy substances, reptiles and young animals which tended directly to overcome the powerful effect

of the astringent properties of the seed or jackoak acorn. This variety of mast is far the most dangerous, as its astringent properties are proportionally greater. Continued feeding upon these nuts injuriously affects the urinary and other organs.

The cultivation of land and removal of timber, have left the fields free from roots and herbs, mice, insects, and other varieties of such food as formerly was found and eaten, rendering the hog entirely incapable of obtaining the needful remedies for such condition as above described. Any prudent farmer will see at once how necessary it is to supply this want, and will do so instead of allowing the hogs to die.

STRAW STACKS, MANURE HEAPS AND BARNS.

Another and potent cause of disease is the manner in which hogs are kept, and particularly so where the farmer entrusts the entire care of the animals to the employes about the farm, who naturally take little or no interest in the condition in which they are kept, in order to avoid extra labor, and attention in caring for them. The owner having neglected to provide suitable quarters, the hogs are expected and allowed to shift for themselves as best they can, And in cases of this kind they very often seek an old straw stack, fermenting manure heaps, dusty shed or barn in which to sleep. This cannot be too severely condemned. Here they crowd together in large or small numbers, according to the size of the drove, and sometimes even burrow beneath the straw or litter, and are thus compelled to breath the impure and noxious gases engendered thereby. These taken into the system poison and weaken it, and generate disease, which, sooner or later, takes a malignant form, in the way of typhoid or lung fever, and becomes epidemic and contagious and spreads over a large scope of country. In my practice I have often traced the first disease that

was known in a neighborhood, to some farm where I was satisfied it started in this way. In other instances it was traced to farms where the swine were allowed to sleep in dusty sheds or under barns. Here they are compelled to breathe or inhale the impure air and dust found in such places, which is very dangerous, especially where the buildings are occupied by other animals. The solid and liquid excretions of the other stock, mixed with that of the swine, or the excretions of the swine, mixed with the dry litter of sheds or barns, present the means for the germination of disease. In warm or wet weather, the evils that arise from swine sleeping in the above named places are more noticeable and more dangerous than at any other time; as the hogs which are crowded or piled up in such places become very warm and wet with sweat, and upon coming out into the cool air, undoubtedly take cold and thereby contract a more fatal malady. By observation, I have very frequently found this to to be the cause of a very malignant type of disease, especially with fat, young hogs or pigs. This being the case, the farmer or owner of hogs should see at once how important it is to remove the cause, and give the hogs such treatment as would release the local trouble, before it had taken a fatal form.

A DIFFERENT SYSTEM NEEDED.

Swine need to be treated radically different from the usual methods employed in their feeding and care. Too much hog cholera pervades the hog growing districts; and it is caused almost wholly by not observing proper sanitary conditions in their feed and care. A hog is not necessarily a filthy animal, and if he is to make meat suitable for human food he should be reared in strict cleanliness, and fed on only such food as will be most conducive to healthy growth. The parasites, such as trichinæ, which seem to make the system of

the hog their home, are no doubt the offspring of the system of feeding and methods of their rearing, and when it is permitted to eat anything and everything, it will likely be affected with trichinæ, and if it is much affected it will show it by its general appearance. Filth and unwholesome food will beget these parasitical and also other diseases in the human body; and could we reasonably expect a disregard of these sanitary conditions, which the human family has to observe so closely, to be carried on for years with the hog without producing at length just the results which have been observed in the cured pork that has made so much trouble with our export trade? A change must be made, and on many of our most advanced farms it has already been made; and the filthy pen and muddy yard have been dispensed with for the clean pastures. But yet corn, the great progenitor of so-called hog cholera, is still used too much in feeding young and growing swine; and the food for fattening hogs is confined entirely too exclusively to this heating and fever-producing grain. The eyes of many of our swine breeders are becoming opened to these facts, and they are making radical changes in their system of feeding. Corn is still their main food; but an exclusive corn diet, from birth until made into pork, has been changed for clover pasture, roots, etc., and a variety of grains.

Cleanliness with raising and feeding hogs is just as essential as it is with other stock. The idea that anything is good enough for a hog, is an idea of the past, and is one that should not be practiced in this progressive age. The meat of a clean and well-kept hog that has been fed on a variety of good food is far sweeter and better and more healthy than one raised in filth. The practice of feeding hogs in mud and filth, and the constant use of bad water, over-feeding of corn, clover, or any other food, is very wrong, and

will bring on disease. A change should be made. That is, feed two or more kinds of food at a time. If they are being fed on old corn or running on clover that has become old, they should have, once a day, some wet food or swill, made of mill feed or ground grain, oats, barley or corn, or what is still better, crushed corn, as it is more bulky and affords roughness. This will aid digestion and prevent constipation, and prove very beneficial in this way as well as to cause the hogs to fatten much faster. These sloppy foods are something that hogs at times necessarily need, or else roots or vegetables of some kind to take their place; also salt, or a better substitute to take its place, once or twice a week. For this purpose my Tonic Powder will be found invaluable. But treat hogs as you will, they are as liable to disease as any other stock, and when sick should be cared for. Humanity and sound policy demand this.

TRICHINÆ IN PORK.

Never under any consideration whatever, use the meat of hogs that show any indications of disease, for it is in the flesh of these hogs that the parasites that cause trichinæ are found, and it is by the use of diseased pork that this terrible disease is caused. There is no more danger in eating good healthy pork, either raw or cooked, than there is in eating some other meat the same way. If the lungs, liver, melts and kidneys are sound (void of ulceration), you can eat the meat with safety, as you please. If not, it should be well cooked at all times before using. This may sound strange to some who read it, as they think all persons cook their pork before eating it; they do, as a rule, but a great many farmers and others too, of every nationality, eat raw ham the same as dried beef.

Hogs are not naturally infested with trichinæ, unless they swallow or otherwise imbibe the germs of

the insect to be found only in feculent matter in a state of fermentation or decomposition, either moist or in the dried, impalpable condition of a fine dust inhaled into the lungs, in which latter case they affect first the liver and then the colons and bowels, and the disease acquires the cognomen of "cholera," by the changed symptoms and malignant nature of the disorder.

Unfortunately for the swine race under domestication, they are not as fastidious in their taste as their fellow-beings of the bovine family, hence the consequence is that nutritious food is seized upon, though mixed up with fecula in a state of fermentation, which, if it were separate, the hog would no more touch than the horse or ox, who by more fastidious tastes shun it even in the grass growing near to it and smelling of it. Yet the cow can be found to eat fecula in a state of fermentation, and thereby become liable to the infection we call trichinæ in pork, only in the cow the disease would be called "pleuro-pneumonia," or perhaps farriery might call it "murrain." The hog can be saved from such liability by removing all temptation to get it, or by preventing the animal from breathing it in dust.

What I desire the reader to understand is, that neither hog, cow nor man or other animal is subject by nature to any infectious disease, except the germ of the infecting parasite be imbibed either by the stomach or some other imbibing organ of the animal, or in the case of external infection, and that all parasite life originates in matter in a state of fermentation, somewhere in or between the vinous and the putrefactive stage, and that the matter imbibed is in the state of fineness of particles composing a gas, or in the more infinitesimal, primary state of spontaneous or electric combination; and lastly, from experience that hogs fed on grass, grain, slop or milk, before entering into

the state of fermentation and unconfined in filthy stys and close atmospheres and noxious gases, are not subject to any disease, much less trichinæ, while any animal is subject to the diseases known to man only as indicated above.

Dr. Detmers, a careful investigator of trichinæ, says: "That I am correct in ascribing the principal sources of trichinæ in hogs to the bad habits most of our farmers have of leaving hogs that die of swine plague, and of other diseases, too, unburied, will appear from the following: We had very little swine plague and very few losses from that disease in the West in 1883. The winter of 1882–3 was a severe one, the spring of 1883 was wet, pouring rains were frequent, and the summer following rather backward and cool, all conditions unfavorable to the preservation and development of the swine plague germs (diplococeus suis). In August, 1885 when I announced my trichinæ investigation, I examined mostly last year's hogs over a year old, and found $3\frac{1}{2}$ per cent. trichinous; in September some younger hogs, or hogs less than a year old, commenced to come in, and I found only 2.43 per cent. effected; in October, when most of the hogs examined were less than a year old, the percentage came down to 1.62 per cent., and in November, when nearly all the hogs examined were young animals, the very low percentage of .73 was reached. Besides that in some of the hogs found to be trichinous the trichinæ were already calcified, or in a state of calcification, which shows that the same cannot have recently invaded the animal organism and were probably over a year old. Further, as said above, hogs from countries never seriously invaded by swine plague were almost invariably found free from trichinæ. In one carload of hogs from Dakota, one animal was found to be trichinous, but the trichinæ were old, showed incipient

calcification, and it is tolerably safe to say that hog, very likely, was not a native of Dakota, but born and invaded by trichinæ in Illinois, Iowa, or some other State, from which many people recently emigrated to Dakota. Another proof that the prevalence of Swine plague, or numerous deaths caused by that disease, and that the consumption of the dead hogs by the living, constitute the principal source of trichiniasis in swine, is furnished by the following facts: A few years ago, when swine plague was extensively prevailing in the West, and when the losses caused by that disease were far greater than they are at present or have been during the last two years, the percentage of trichinous hogs reported by other investigators was much higher than that found by me in the fall 1883, from August till date, notwithstanding that my examinations have been made in a most thorough and conscientious manner, and with a microscope that had a large mechanical stage, which permitted a systematic examination of every portion of the slide. If numerous deaths of hogs by swine plauge or from other causes, and a subsequent consumption of dead hogs by the living, does not constitute the most fruitful source of trichiniasis, the decrease in percentage of trichinous hogs coincident with the gradual disappearance or decreased prevalence of swine plague cannot find a rational explanation."

INFECTIOUS AND CONTAGIOUS CHARACTER OF SWINE FEVER.

When cholera, swine fever, has assumed a malignant form, it is the same as the Asiatic cholera, or tyhpus or typhoid fever with the human family, and similar to epizootic and pneumonia with other stock, being infectious and contagious. It has been practically demonstrated by good authority that hog cholera, swine fever, is a "germ disease," capable of being ger-

minated, propagated and transported in various ways. It has been a great mystery to the farmer how this disease spreads from place to place without apparent actual contact, and was like fighting in the dark to attempt to prevent it, and many give up in despair and await its coming, or, after a few cases have occurred, cease all remedies or precautionary measures and allow their hogs to die. There is no doubt but that it is infectious and conveyed by pores or germs in the air. It is most difficult to draw the dividing line between the epizootic nature of the disease and the contagious form. There is no doubt but that the infectious nature of the disease may, under a predisposing condition of local causes, etc., take the contagious form, which is far more malignant, sweeping and fatal in character. A few spasmodic cases may occur in a drove, which, if neglected, may so increase in number and violence as to become highly contagious. This contagious matter is of a fixed character, and is present in the blood, the discharges, and of course in the place inhabited. It possesses great vitality.

Some of the principal methods of spreading this disease are the

DANGERS ARISING FROM STREAMS OR POOLS.

It is not infrequently the case that swine afflicted with this contagious disease will go to a running stream to drink, and, standing or lying in the water, die. The stream carries the virus from such dead animals for miles along both its banks. And hogs drinking the water below are almost certain to contract the disease. The same class of exposure is met when buzzards, which have gorged themselves on the carcasses of diseased hogs, seek a pool of water, and, after drinking, vomit the contents of the craw either into the water or on the banks. Hogs drinking the water, or

eating such material, are certain to at once become diseased. Another method is

IN THE EXPOSURE OF DEAD HOGS.

Where dead hogs are not buried deeply, or piled up and left to decay, the grease from them will penetrate the ground for quite a distance, carrying with it the poisonous virus or germs, which, away from the air, retain their poisonous qualities. Hogs coming in contact with those places will, in many instances, root up and eat the earth where such dead animals have decayed, and in such cases they invariably become diseased. There is also a practice of feeding the dead hogs to the herd, many farmers claiming by so doing the living animals are benefitted. But in all my years of experience I have never found this to be the case, unless the dead bodies were first well charred, when there may be some benefit derived in so doing, but otherwise it is only adding fuel to the fire. In some instances parties claim, by burning corn-cobs and corn with the dead hogs, and allowing the other hogs to eat this preparation, that the hogs will get well. I have done this when the circumstances would admit of it, as it has a similar effect to the medicine I use in treating hogs, and sometimes saves using so much medicine. But it is not as reliable as the medicine, nor can it be at all times adopted.

These methods of exposure to this disease I have always found to be very dangerous; and when hogs become diseased from either of these causes, such attacks almost invariably are attended with fatal results. The germs of disease in such cases having been brought directly in contact with the mucus membrane of the mouth or stomach, and the warmth of the animal furnishing the germs with the needful elements of growth and formation, the hog speedily becomes diseased, past all hope of recovery, unless such treat-

ment be resorted to at once as will enable the animal to throw off or overcome the effects of the poisonous matter. This alone should prove to the farmer how important it is to burn diseased hogs as soon as dead. For by so doing all this danger is obviated, and the germs are entirely destroyed. If left lying where they happen to die, or if they are hauled out and piled up, or not buried deeply, the carcass or a part is likely to be found and devoured by hogs, or else the bones and flesh will be carried about, and sometimes for miles by dogs or other animals and deposited in such places as hogs will find and devour them soon afterwards, and become diseased. Some advocate that the dead hogs should be buried at least four feet deep. Knowing that the farmer will not go to the trouble of burying them four feet deep, I still repeat the advice in my writings of former years, to burn them, as that obviates any further trouble.

THE PERIOD BETWEEN EXPOSURE AND THE ATTACK.

The intensity of this contagious matter seems also to vary according to the form and malignancy of the disease. The period which elapses between exposure and the attack is not always the same, varying with the form the disease assumes, from a few hours to a few weeks. As stated before, an infectious disease may become malignant and contagious, and one form of the disease does not necessarily impart the same type to another, but depends more upon the primary seat of the malady in the patient. It may take the enteric form or the external carbuncular character. It may localize its attack on certain organs with well defined symptoms, which are more prolonged in their results, or, it may effect the whole organization and destroy life in a few hours. The experiments of Drs. Law, Detmers, Salmon, Sutton, Budd, Osler and others, in inoculating sound hogs with the virus or poisonous

blood of sick ones, have shown the period of incubation to vary greatly, sometimes proving fatal the first day, and in other instances, not until the fifteenth day. Dr. Detemers gives the period "from five to fifteen days, or an average of seven days." The author's experience and observation in having well hogs with sick ones, has placed the period of infection from three to thirteen days, but the majority of cases occur in from seven to nine days.

A CARD.

This subject was overlooked — though somewhat out of place here — yet, for my own benefit, as well as for others, I will answer this question, which has been very often asked me: "Why do you not sell your treatment to the government; they offer a hundred thousand dollars for a cure for Hog Cholera?"

Others will say, "Certain States offer ten or fifteen thousand dollars for a cure." Now I have heard this so often, and often, too, from good authority, that I supposed there was something in it; but upon investigation I found it all false. There never was and probably never will be such an offer. It would not make any difference how good a cure any person had, to cause such an offer would take the united efforts of the entire agricultural press and people. The only way this terrible scourge can be controlled is for every swine breeder or feeder to take an interest in it, and make use of the best method of treatment that is known.

CHAPTER XI.

INVESTIGATIONS OF SWINE DISEASE

Investigations by the Government—Discoveries of Drs. H. J. Detmers, James Law, and Others—How it Affects the Lungs—When the Death Rates Increase—Intestine and Lung Worms—The Germ Theory—Crowding in Confined Spaces Under Barns—Drains, Manure Pits, Cars, and Vessels—Why Summer is the Most Dangerous Season—Value of Loose, Dry Earth as a Disinfectant—Preventives Against Disease—Theoretical and Practical Ideas.

INVESTIGATIONS BY THE GOVERNMENT.

IN support of the practical experience of the author set forth in the preceding pages, I cannot do better perhaps than to give some extracts from Drs. James Law and H. J. Detmers, in their excellent report to the Commissioner of Agriculture of the United States, in 1880, upon the cause and effect of hog cholera, swine fever, or what they called hog fever or swine plague. In experimenting in this direction and others, Dr. H. J. Detmers and Dr. James Law, while investigating this disease in the fall and winter of 1878 and 1879, and in 1880, being a part of the commission as appointed by the government, made some discoveries which I consider of value, and I will give such extracts from their report as I think may be useful to the general farmer, in order to show more plainly the cause and effect of hog cholera or swine fever and its treatment. For it was about this time, or during the said investigation, that the "hog cholera

or swine plague germ" was discovered, and since which practical experience has proven to be the correct theory of the cause of the above named disease spreading so rapidly throughout the country. The suggestions are good and cannot be too carefully read and studied by any one, and especially those who have heretofore had no knowledge of the hog cholera germ or by the opponents of the so-called "germ theory" of diseases.

Dr. Detmer says: "When I first commenced my investigation in the fall of 1878 and in the winter of 1878 and 1879, I had clear sailing, because an abundance of material was always available. The disease presented itself almost everywhere in its malignant form. I endeavored first to ascertain the nature and the cause or causes of the disease, the means and the manner of its spreading, and the working of its morbid process; to discover the means necessary to check its spreading and to prevent its outbreak, and to learn the most practical means of prevention, that is, such as would most likely be the least objectionable to the farmers, and prove both effective and easy of application; to ascertain whether and to what extent an attack of swine plague terminating in recovery is able to destroy further predisposition or to produce immunity from the effects of a subsequent infection. Hence, as it was my intention to find reliable means of prevention, and to subject the preventives to a severe test, it was not advisable to inoculate from any case of swine plague that presented itself or was convenient. But I made my selections, and only used material for inoculating from malignant and typical cases of swine plague, also refusing to use any material from cases showing putrefaction; therefore, I am sure I have made no mistakes.

HOW IT AFFECTS THE LUNGS.

"The morbid process of swine plague can have its seat in almost any organ or part of the body. Yet it must be considered as characteristic of the disease that the lungs invariably are more or less affected, and constitute in a large number of cases the principal seat of the morbid process. At any rate, in over two hundred post mortem examinations, I found this to be more or less the case. This stage of the disease, severe affection of the lungs and heart, is more frequent in severe cold weather, and more acute, and fully as fatal as in warm weather, a fact easily explained in the habit of swine crowding together and lying on top of each other when the temperature is very low. Whenever investigations have been made, the examiners have found the symptoms and post mortem appearances of the disease the same, and hence agree as to the propriety of designating the affliction under the head of a general disorder. But during cold weather it does not seem to spread so readily from one farm to another as in warm weather, but as to its spreading from one animal to another in the same herd in which it previously existed, no difference can be observed.

"Further, whenever the morbid process of swine plague has become sufficiently developed to produce morbid changes, serious enough to manifest their existence by a rapid emaciation, the growth and thrift will be impaired, but the growth and thrift, it seems, remain more or less unimpaired only in such cases. Some years the disease is of a much milder type and less complicated than others, and the symptoms less varied, but otherwise exactly the same.

WHEN THE DEATH RATES INCREASE.

"The death rate in a herd of affected swine is increased or decreased respectively by the malignancy of the disease, which, it seems, depends largely on the

one hand upon the rapidity with which the swine plague germs develop and propagate, and, on the other hand, upon the size of the herd, the condition of the premises upon which they are kept, the number of diseased animals in the herd, and the mode and manner in which the animals are attended to.

"Everything else being equal, the mortality, as a rule, will be the greater the more rapidly the disease is spreading from one animal to another, and the more abundant the infectious principle. This is easily explained. The larger the heard, and the greater the number of animals diseased at the same time, the greater also is the quantity of the excretions containing the swine plague germ; consequently the more abundant the means of infection, and the more rapid the spreading of the disease within the herd. Again, a rapid spreading causes many animals to be affected at the same time and thus increases, not only the sum total of the number of germs discharged with the excretions of the diseased animals, but also the quantity of the infectious principle taken up by each individual pig. As a consequence, the single attacks become the more malignant, and the more malignant the single cases the more rapid will be the dissemination of the infectious principle and the spreading of the disease.

"It can and may attack one and the same animal twice, and even three times, but if it does, the second and third attacks are always mild ones and not apt to prove fatal, unless complicated with other diseases. As a rule, however, the first attack, provided the animal recovers, produces immunity from the effects of a subsequent infection, at any rate, for some time, and it may be for life. The same seems to destroy fully or partially the condition necessary to the development of the swine plague germ. Even an interrupted attack, or, in other words, an infection that has been

prevented from causing serious morbid changes, either by medical treatment or otherwise, as a rule, seems to produce immunity from the effect of a subsequent infection, the same as a fully developed attack.

INTESTINE AND LUNG WORMS.

"In my post mortem examinations I frequently found worms in the stomach and intestines, also in the bronchial tubes and lungs. But these worms do not constitute the cause of swine plague, and their presence is merely an accidental complication, well calculated, though, to increase the malignancy of the morbid process, because their presence necessarily weakens the constitution of the animal, and thus facilitates the operation of the germs. On the other hand, worms always thrive better in a diseased or declining organism than in a healthy animal. The same of course cannot be said of worms found in the bronchial tubes, because in every case of swine plague the lungs are more or less diseased, and it is difficult to determine how much or how little the presence of those worms may have contributed to bringing about the morbid changes. In parts of the lungs, but little affected by the morbid process of swine plague, but affected with lung worms, the mucus membrane of the bronchial tubes presented a little swelling, or what may be called a catarrhal condition."

THE GERM THEORY.

The Doctor, in support of his theory, says: "The opponents of the so called germ theory of disease, well knowing that a complete separation of the germs from the animal tissues and fluids is impossible, demand absolute proof, without offering any evidence whatever in support of their own 'theories' or even demonstrating the existence of anything akin to what they claim constitutes the cause and infectious principle of infectious diseases."

As further proof that the swine plague germ and nothing else constitutes the infectious principle of swine plague, he offers the following, all of which, except the inoculation, I have fully tested and know to be correct: First, if one inoculates a well hog with the virus of a hog that has the swine plague, it will contract the disease, and this virus can be retained for quite a while, and favorably cultivated in urine or other liquids, and if healthy hogs are inoculated with it, it proves fatal. Other animals, especially the rabbit, and rats, or mice, can be successfully inoculated and die of swine plague. Once affected they may carry the disease long distances. Second, if portions of a hog which has died of swine plague are fed to a healthy hog, it proves fatal, and healthy hogs will contract the disease if put in a pen with sick ones, or where sick hogs have been kept. This proves that it is infectious and contagious. Open sores, wounds, or scratches, attract and absorb the infectious principle, if floating in the air; hence a hog in this condition is more liable to contract the disease than one that has no eruption of the skin. Third, in warm weather, and especially if wet, the disease spreads from farm to farm much faster than in cold weather. Fourth, hogs kept separate and in the open air, will not contract disease as quickly as hogs will that are kept in large droves and allowed to sleep about old straw stacks, etc., because nothing is more apt to absorb the contagious or infectious principle, and to preserve it longer or more effectively than old straw, hay, or manure heaps, composed mostly of hay or straw; for the contagion that is absorbed by or clings to such material will remain effective and be a source of spreading the disease for a long time. The learned doctor's investigations show that hog cholera, swine fever, or what he named "swine

plague," though a disease peculiar to swine, can, under favorable circumstances, be communicated to other animals, and under very favorable circumstances probably to human beings.

The author has satisfied himself that the disease is not apt to be communicated by working with diseased hogs in any manner, he having been frequently bitten when handling them, and he has many times held post mortem examinations of hogs that have died of cholera when his hands were sore and often raw in places without ever experiencing any unpleasant results from so doing.

VITALITY OF THE GERMS.

Following this, the author will give some extracts from Prof. James Law's report, as to how the swine plague germ may be stored up and transported from one place to another. This will be followed by an account of such treatment as recommended by Drs. Law and Detmers, as preventive of the disease, and some remarks will then be given as to theoretical and practical ideas, and then the author's practical treatment.

The learned Doctor says: "It is evident that we must guard more sedulously than ever against the possible storing up of the virus of swine plague in confined spaces where it has little access to air, and above all when there is superadded organic matter and moisture which may serve to maintain the vitality and assist in the propagation of the poison."

We cannot too severely condemn the current practice of allowing pigs to crowd together by scores and hundreds in the debris of rotten straw stacks and dung heaps, where they lay like sardines in a box, and even piled one above the other, closely enveloped in the masses of decomposing dung or litter, which not only shuts out the pure and wholesome air, but generates an abundance of noxious gases to take its place

and weaken the system. This doubtless contributes much toward laying the system open to the attack of whatever germ is imported into the herd. It probably does not generate the germ, otherwise the plague would be even more prevalent than it is. Yet the resulting condition of the blood of the pig, the lack of oxygen, and the growth of the virus in this state of the fluid, in harmony with the principle we have been considering, must enhance its virulence and increase the mortality. But it is the intensifying of the poison which has passed out of the body which is especially to be feared. In deposits from the breath, skin exhalations, urine, or dung of the pigs, the germ must find in the damp and more firmly packed lower layer of such refuse, and in the damp, close soil beneath, saturated with decomposing organic matter, the best field for its preservation and for the conservation or increase of its virulence. If the pressure of liquid charged with organic matter could be done away with, the virus would lack for food and would be more readily destroyed. If the air could be freely admitted to all parts of the mass and soil, the virus would soon perish or be transformed into a harmless material. But as it is, this warm bed of the herd supplies the conditions which we have found to be essential to the preservation of the plague germs and to the increase of its potency. In connection with this question it should be considered that among our domestic quadrupeds, the pig requires the very largest amount of oxygen in proportion to its body-weight.

CROWDING IN CONFINED SPACES UNDER BARNS.

"It is very dangerous when hogs crowd together in large numbers, in a confined place under barns occupied by other animals. Here the solid and liquid excretions of the stock above pass, to a certain extent, through the floor, and thus mixing with the excretions

and exhalations of the pigs, accumulate in the confined area, saturate the ground, and produce constant emanations that deteriorate the air and undermine the health of the animals that crowd together in the close and stagnated atmosphere. Such sleeping places may, therefore, be set down with manure heaps and rotten straw stacks as propagators, though they may not be germinators of the plague. In the present state of the swine industry in the western states, the swine plague is so wide-spread that the chances are always favorable to the entension of the contagion, and no herd, however well cared for, can be looked upon as safe; yet the danger may be greatly enhanced by such management as to surely contribute to the multiplication and potency of the germ.

DRAINS AND LIQUID MANURE PITS.

So called improvements are often fraught with unseen danger. Sewers serve to spread typhoid fever, diptheria and cholera; warm, air-tight barns propagate pneumonia, consumption and glanders; and closed, covered drains, cesspools, liquid manure tanks, or unventilated spaces beneath the floor of a pig pen, are liable to spread hog cholera. If these are indulged in they should be properly ventilated by inlets for fresh air, and should on no account be opened into a close pig pen to befoul its atmosphere. Emanations from such close, confined drains and pits are always unsanitary and injurious to animals requiring such abundance of pure air as do swine, but they must become pre-eminently plague pits and passages when once the hog cholera germ has been introduced in them.

"It must be apparent that many of the objections to wooden piggeries apply no less to railroad cars. The joints and crevices, the accumulation of filth, and the absence of all systematic disinfections, the constant use of the cars for successive loads of swine, and

the impossibility of obtaining perfect drying and airing in the intervals between trips, all combine to make these vehicles the bearers and disseminators of contagion. The absence of air in the masses of accumulated manure, and in the interstices of the wooden floor or wall will even go far towards adding a new force and malignancy to the poison that may be introduced. In boats there is the additional danger of the close atmosphere between decks and the bilge-water in the hold, attaining increased virulence and malignity and spreading a more inveterate type of the malady than that from which it was derived.

WHY SUMMER IS THE MOST DANGEROUS SEASON.

"Various considerations will show the especial danger of summer. In winter the germs cannot multiply, being laid up in litter or congenial soil, not dead, but inactive, like the dried and stored seed, ready to start a new growth and increase when subjected to the warmth and moisture of spring and summer. Thus it is that the disease often disappears during the winter months, but breaks out anew on the return of genial weather. In summer the germ in the soil, building, or other places, is free to grow and multiply, and buried more or less deeply, it is constantly liable to be set free by the rooting of the hog. The germs thus rooted up from a depth in the soil are likely to be far more dangerous than those that may have been left on the surface, having met with little air to produce a salutary modification. In summer, too, the hog exposed to the scorching rays of the sun is rendered feverish and more susceptible to the action of disease poisons. The air that he breathes is much more rarefied and contains far less oxygen in a given volume, and thus the purification of the blood is likely to be less perfect than in colder weather, and impure blood is more conducive to the production of a malignant germ. If the hogs are

fed, as is too often the case, even in the extreme heat of summer, almost exclusively on Indian corn of the preceeding year's crop, this adds its quota of costiveness, intestinal irritation and fever, to favor the disease in its worst type. Finally it should not be overlooked that the summer is the season of the greatest number of hogs, and especially of young hogs that have never had the plague, and are therefore especially susceptible to its ravages.

VALUE OF LOOSE, DRY EARTH AS A DISINFECTANT.

"This appears to depend largely on its antiseptic and deodorizing properties. Finely powdered dry loam and clay, are direct atiseptics, and have the power of absorbing the noxious gases produced by organic decomposition and the growth of bacteria. Moreover, they are porous in an eminent degree, and transmit through their substance a large amount of atmospheric air which producss the less obnoxious fermentation. Hence in earth closets the disagreeable odor may be entirely suppressed. In the case of anthrax carcasses the virulence may in time disappear, and in hog cholera the same good results can be attained, but it must be observed that it is the dry, pulverulent, porous earth alone that will act in this way. Moisten it and pack it firmly, and its good qualities may be at once exchanged for evil ones, and it may become a dangerous propagator in the place of a destroyer of infection. Dry earth is not a potent and speedy disinfectant, like chloride of zinc, or lime, but will act slowly in this way if dry, open, and porous. It may be used in certain cases as an auxiliary to other disinfectants, and its action is mainly valuable as showing how the porous dry soils are slowly but permanently destructive to such poisons as those of anthrax, chicken cholera, and swine plague."

BENEFICIAL PREVENTIVES.

In treating diseased swine that are ailing with the genuine hog cholera, swine plague, Drs. Law and Detmers say: "First, remove the hogs from all infected places and the sick from the well ones; then use as disinfectants in the operating yards or pens, chloride of lime, chloride of zinc, sulphate of iron, or carbolic acid, the latter being considered the best and safest, and guard the well hogs with every conceivable precaution against the introduction of the diseased germs through accidental channels, as by other animals or fowls carrying the diseased flesh of those that have died, or otherwise, as already mentioned. Second, the system can be habituated to the poison and fortified against it, by a succession of small doses of medicines, for if a germ is once introduced, though of mitigated fever, it may increase so as to develop to an altogether unexpected degree. Third, pains should be taken to supply pure air, and surroundings to avoid extremes of heat and cold, to give gently-laxative and easily-digested food, and to correct any unhealthy condition of the functions, above all that of digestion. Finally, when all have recovered, disinfections of the premises should be conducted in a very thorough manner."

In reading the extensive writings of these men the author learns that they do not, as is understood by many, claim that the disease can be checked or cured, after it has assumed a malignant form, by the use of carbolic acid, but if used in time as a disinfectant and with good sonitary measures it is beneficial as a preventive. This opinion has misled a great many who have resorted to the use of carbolic acid as a cure for the so-called hog cholera, and, upon failing to effect a cure, have unmercifully condemned its use. Carbolic acid, if properly used in connection with other drugs, is often beneficial when given internally, and always

beneficial when used as a disinfectant. There is no one drug that can be used effectually with diseased hogs, for they are not all affected alike. Therefore it requires a combination of drugs which act in harmony with each other and upon different parts of the sytem to be successful and arrest the disease in its different forms. This combination, by long and careful study, and practical experience, I claim to have discovered, and can conscientiously recommend it to all as a safe and reliable remedy.

The suggestions in regard to careing for hogs, as given by the above-named doctors, are very good. The drugs they name are useful for disinfecting purposes, but if given internally they have but little, if any, effect, There will be time enough to try to cure hog cholera with carbolic acid or any other poisonous drug when physicians start out with a camphor bottle or asafeoita bag to cure typhoid fever and other fatal diseases of the human family.

THEORETICAL AND PRACTICAL EXPERIENCE.

People deal largely in theory. We have tons of theory upon almost everything. This is the result partly of the necessity upon the part of some to say something, whether there is any sense in it or not. Men are often paid for talking and writing, and the machine must run. If they are inspired with a specially warm desire to appear to earn their money, they will often incubate and hatch a theory which nobody else ever thought of, and which, perhaps, it would have been well if nobody had ever thought of. They may keep on harping upon such a theory until practical men adopt it, only to find that it is good for nothing and wholly false. These theorists have nothing to lose by such failures. They make their profits from theories, but the practical operator must make his from successful work. It is therefore highly desirable to move

cautiously in the adoption of theories. We often waste time in reading a smoothly worded address by some professional theorist, who would command much more attention from an ordinary audience than many a practical man would, who knows more in ten minutes than the professional theorist ever knew in his life. It is plain facts that the world stands in need of, facts that are demonstrated to be such beyond the possibility of doubt; demonstrated by every-day experience, and by the experience of years.

In agricultural papers, and others, too, and even in some veterinary books, there are always to be observed two classes of writers, the theoretical and practical. Both write, however, as if they were telling just what they knew to be true. But it is not difficult to determine which is the theoretical and which is the practical. The practical writer comes right to the point. It is to be observed that in every line he is telling his experience. Sometimes what he says is not in the smoothest language, but it is worth its weight in gold. Frequently a practical writer expresses fear that he will not be understood, and expresses regret that he has ever attempted to write at all. Such a man can never fully realize how his effort is appreciated by the public. There is never any trouble in discerning what such a writer means. It is the theoretical writer who bothers the reader, for there is nothing to go by frequently, except what the writer says, and if that happens to be ambiguous, the dilemma is a serious one. C. B. Burleigh says: "Whoever adds to the general fund of human knowledge, or explodes an incorrect theory, is a public benefactor. Science numbers its martyrs by thousands, and the world is better and wiser for the lives of men who, with heroic devotion, have sacrificed themselves in establishing eternal truths. Experiment, though unsuccessful, is never

worthless. The discipline and example of earnest effort are always beneficial; and it has often happened in human history that, in following out some steadfast purpose, incidental discoveries have been made of infinitely more value than those originally sought. In fact, a large proportion of scientific discoveries are accidental, rather than the result of direct experiment."

The public delights to have solid experience, and that is what the author of this work has kept in mind, and shall, throughout the entire work, aim to exclude all theories, or avoid giving such as will be of no value to its readers. He will insert nothing but what he knows by actual experience or observations has been thoroughly tested and practically demonstrated to be of value and will prove beneficial to his readers, and educate the masses instead of the few.

CHAPTER XII.

TREATISE ON DISEASED SWINE.

INTRODUCTION—HOG CHOLERA—GENERAL INSTRUCTIONS—WHEN MEDICINE FAILS—SEPARATION AND GRADING OF THE SICK—EXERCISE AND AIR—THE BEST WAY TO PREPARE THE FEED—AS A PREVENTIVE—TREATMENT FOR GENERAL USE—HOW TO DRENCH HOGS—HOW TO GIVE INJECTIONS—EXTERNAL APPLICATIONS—TREATMENT OF SOWS WITH PIG—INCURABLE CASES—WHY MY TREATMENT IS A SUCCESS.

INTRODUCTION.

THE following treatise on diseased hogs and poultry is based upon practical knowledge and scientific principles, the result of careful study, experience, and practice in the field by the author from 1878 to 1887. The marked progress made by me during the past four years in the practice of treating diseased swine, and the demand for more information upon this subject from my numerous patrons renders a new volume indispensably necessary; not that the principles of my medical practice have been materially changed, but greatly improved upon and simplified. Having made some new and valuable discoveries, both in medical compounds and modes of treating the different diseases of swine, I will in this edition give the added experience of those years of constant labor and observation in my only and chosen profession; and in presenting my works to the public, I feel confident that if the rules herein given are carefully carried out,

that any diseased lot of hogs can be saved, and the disease entirely eradicated or prevented on any farm or in any neighborhood.

In the treatment of the diseases of swine it is important to remember that the location of the internal organs are nearly the same in the hog as in man, and about the same treatment should be followed as far as practical. In both cases prevention is of utmost importance, and any treatment of swine plague to be practical must afford a reliable preventive. This I have kept in mind, and do not pretend to both cure and prevent the diseases of swine with the same remedy, but my improved formulas give particular remedies for both, and I explain the different symptoms and name the drugs and amount of each so that any one can treat diseased hogs or use the preventive intelligently and successfully.

Although I do not use the common drugs which are used in most proprietary medicines, or by farmers who have recipes of their own, such as copperas, sulphur, red pepper, venetian red, ginger, saltpetre, calomel, or arsenic, and these, or a part of them mixed in oil cake, meal, shorts or coal oil; yet the drugs which I do use are as easily handled as those named. My mode of administering medicine to swine, in fact, the only successfull way, is to mix it with their drink or wet feed. Being less manageable than any other stock they obstinately resist all at tempts at coercion, and drenching is rarely practicable, and caution and great care should be observed by the inexperienced in administering medicine in that way. If hogs are too far gone to eat or drink, the chances of recovery are against them, but by careful treatment even in this stage of the disease, they can very often be saved. In my treatment, as to the management and the administering of the medicine, I shall endeavor to be so plain and practical that

any person can readily understand it, and by its practice make the treating of diseased swine a success.

This treatise has been thoroughly tested by many of the best breeders and feeders of Ohio and other States, not only as a cure and preventive for the many local diseases, but as a cure and preventive for the swine plague in its most malignant and contagious form. It bears their unqualified endorsement. The testimonials used by me in any way are all bona fide, and from persons of good standing in their respective communities or professions.

HOG CHOLERA.

I will first mention the three most fatal diseases known to swine, and their symptoms, and commonly known all over the country as hog cholera. These are genuine cholera, swine or typhoid fever and typhoid pneumonia. With cholera the symptoms are vomiting and purging, and attacks by severe cramps, as with colic. Those thus attacked generally refuse to eat, but frequently the appetite remains good until death, which occurs within a shorter period of time than with any other disease. With typhoid fever the symptoms are lameness, sluggishness or unthriftiness, with disposition to keep the nest, being cold and chilly, with a high fever, and excessive thirst and loss of appetite, scanty high colored urine, constipation, and frequently diarrhœa, swollen ears, and a rapid emaciation. With typhoid pneumonia these symptoms are accompanied by severe coughing. When hogs are afflicted with any of the above named diseases their treatment is about the same, which I will now describe.

First, I will give the directions for handling and treating hogs, which can be adapted to any number; either where the trouble is only local, or where they have contracted a malignant type of disease, to be suc-

cessful, the directions should be carefully read and followed as closely as possible.

DIRECTIONS FOR GENERAL TREATMENT.

As soon as it is observed that hogs are not doing well, they must be attended to at once; to delay a day or so with them, the same as with other sick stock, may prove too late. First, observe, closely the condition of the hogs, whether the symptoms show constipation or diarrhœa in a bad form or not; also, if they are troubled with a cough, and if you can attribute their sickness to any particular local cause. Thus, by close observation, very often the trouble can be removed with but little expense and labor. As so much has been said before this about what may produce sickness with swine, I will only name here a few things that may be the cause, which may assist the owner or handler of the hogs in discovering the cause and removing it. First, a violent change or an excessive amount of food of any kind. Second, the use of old dry corn alone, or on dry grasses. Third, grasses alone, especially clover. Fourth, scanty feeding, or the use of stagnant, ice or snow water. Fifth, turning in wheat fields and allowing them to eat too much dry wheat. Sixth, the excessive use of stone coal or feeding them on black ground. Seventh, turning hogs on a luxuriant field of second-growth clover, especially in a warm, wet time. Eighth, allowing them to sleep in old rotten or chaffy loose straw or manure heaps, where they are liable to get too warm, or compelling them to sleep out in cold weather, thus chilling the blood. Any of these causes will produce sickness, either in a mild or malignant type. Very often, when the trouble is discovered while yet in its mild form, it is easily removed by prompt treatment and change of food. When the hogs are in a constipated and feverish condition, it can be removed by the use of laxative food and the medicine as

described in this treatment for sick hogs. This, given in sloppy or wet bran, mill feed, ground oats or barley, will soon remove all constipated or feverish condition of the animal. This treatment can be made to act more quickly by feeding some green corn, pumpkins, roots, or turning them on fresh grass after the dew is off. If turned on before the dew is off, they are liable to imbibe into the stomach with the grass the swine germs that may be deposited on the grass with the dew, and thus increase the trouble. In case the disease has taken the other form, and diarrhœa is the trouble, it can be checked by the use of the same medicine; but it acts better by using shorts or rich middlings with which to make the swill. Confining the hogs in a dry lot or field when treating them is best, especially over night or in wet weather. This same treatment never fails to remove all trouble arising from worms or any ordinary cough.

WHEN MEDICINES FAIL.

When sanitary means are neglected, any medical treatment will fail. When hogs are allowed to pile up in straw or bed in manure, either in or out of the stable, it is not worth while to give them any medicine, and disinfectants are of no avail. That cause must be removed. And the same is the case where the hogs have no shelter in the winter, and their beds have become foul, damp and packed; they must either be renovated or the hogs removed. In the first place, when sickness is observed among the hogs, it is best to remove them to another place immediately, so as to get them away from their old beds, etc., especially those that are not sick. When this cannot be done, remove the old bedding by pulling it away or spreading it out, and give them new bedding if necessary, and do not allow them to pile up in loose straw or manure. They get too warm and contract cold, thus

increasing the disease. This, of course, is all the more necessary when the hogs are afflicted with a malignant form of the disease, or in cold weather.

SEPARATION AND GRADING OF THF SICK.

This is something that must be strictly observed. Separate all the ailing hogs from the well ones, and put them where they can be cared for. They should be graded into two or more lots; that is, put the smaller or weaker ones by themselves, so they can drink. When this is not done, the larger or stronger ones will push them away from the feed. This should be attended to at the start, for if they miss a feed or two, it often happens that they cannot be induced to drink after that. Success depends a great deal on how carefully they are sorted or fed. They must have attention, and especially when there are many hogs and the disease has assumed a malignant form. Better take out some that show no signs of disease than to leave in one that does, for it will surely inoculate others. Put the sick in a dry and comfortable lot where they cannot get water. By this means they will become thirsty and can be induced to drink what is given them. See that they have sufficient shelter to protect them from the cold storms of winter. A change from warm weather to cold is very bad for them, especially if wet, and in the summer they should have shade, so that they can get out of the hot sun; if not they will lie in it so long as to perish. In a very hot and dry time they will have to be looked after often on this account. A lot where they can exercise is better than a close pen. An orchard, wood or grass lot is often the most convenient and best place to put them, except in cold or bad weather, when it may be necessary to put them in pens, so as to give them the necessary attention. This is something to which I wish to call the attention of all who use my treatment.

Never undertake to treat sick hogs in a close pen, especially in warm weather.

EXERCISE AND AIR.

In order to have hogs do well they must have exercise and air, and if the lots are too small, they will lie down too much, and should be turned out in a field so that they can run around or be driven about some every day, for the following reasons: First, it not only has a tendency to cause the contents of the bowels and the urine to move off more freely, which is very essential with those in a constipated or feverish condition, but better distributes their passages so they do not come in contact with them. It is the poison that passes off through the bowels and urine that is to be most feared and avoided; not only with swine, but with the human family, when afflicted with a malignant type of disease, such as cholera, typhoid or yellow fever, etc. These poisonous discharges distributed in small quantities over the ground and exposed to the air soon lose their poisonous qualities, but if allowed to accumulate in any way, and especially when they are mixed with the bedding or dry litter, such as old straw or straw manure, they will retain their vigor for some time. Second, the exercise gives them a chance to graze, or increase their appetite, and they are more liable to eat and drink what is given them. Third they have a chance to root and bed in the fresh earth, and that and the fresh air has a tendency to help remove the fever. But if confined in a close pen, especially in warm weather, where the fresh air cannot have free circulation, and they are compelled to breathe the hot, poisonous air, and come in constant contact with their poisonous discharges, the chances are that they will die.

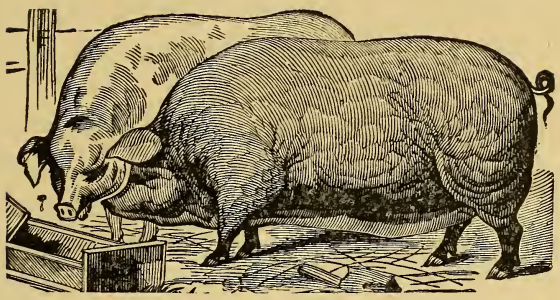
It should be mentioned that all diseased hogs which have rings in their noses should have them cut

out at once, as the nose is liable to become very sore, and the rings interfere with their eating or rooting. But in taking out the rings, care should be taken not to worry them much, as it may kill them. In taking them out use a pair of sharp pincers to cut them in two. When the hogs are confined in pens, the pens should be thoroughly cleaned every day and sprinkled with water mixed with carbolic acid as a disinfectant, using two tablespoonfuls of acid to one gallon of water; or use lime, or lime and charcoal together, for the same purpose.

Those which show no signs of sickness, or still eat and drink well, can be put in lots or fields and treated as directed. Yet, all must be treated, for when once the disease has started in a herd of hogs, it will continue to spread unless something is done to check it. When there are other hogs on the same farm or adjoining farms, and they are not looked after and properly cared for, they are liable to contract the disease. But, if good sanitary means are used, in connection with the Tonic Powder that I prescribe, the disease can be controlled and confined to a few hogs, or a small scope of country. In caring for sick and well hogs, the well ones should be cared for first, and never go direct from the sick ones to the well ones, especially in warm, wet weather, as some of the excretions of the sick may in that way be carried to the well, and thus cause them to become diseased.

THE NEXT THING TO BE DONE.

After the hogs are properly sorted and put in their respective lots or pens, it is best to let them go twenty-four hours without food or drink, unless the weather is very warm, when they may have some water with soda, copperas, lime, or carbolic acid in it as hereafter directed. By confining the hogs thus, they become hungry and thirsty, and can be compelled to take the



medicine more readily, and it will act quicker and better on an empty stomach than a full one. Meantime see that there are plenty of troughs in which to give them food or drink. These should not be too large, so as to interfere with their drinking. Have plenty of them and keep them clean. For this purpose there is nothing better than six inch fencing boards, edged together with end pieces. These can be of any length desired, and will be light to lift about from one pen to another, or can be taken back and forth from any part of the farm by a team, in order to treat two or more lots of hogs.

THE BEST WAY TO PREPARE FEED.

When there are very many hogs to be fed, it is best to prepare a barrel of swill at a time, as it will take a barrel or more to feed them, when they are in large droves, and if it is not all used at once it will not spoil until the next feed, or for a day or two, in cool weather. When it is prepared in this way it can be made of the same strength better than if mixed in small quantities and by different persons each time, as often occurs. A barrel of swill will feed from seventy to one hundred and twenty hogs, depending upon their size and the fatality of disease, etc. Hogs which are very costive will require more swill than those which are not, and large hogs more than small ones. This will have to be governed by the feeder. After the

medicine has begun to take effect, no more should be given than enough to keep the bowels in a normal state.

To make a forty-five gallon barrel of swill, take two bushels of bran, mill feed, ground oats or barley; put it in the barrel, then add six pounds or pints, of my cholera remedy, then fill the barrel with milk, slops or water, and add no more liquid until the whole is used. Stir the swill well while feeding, and feed only what the hogs will drink, twice a day; in most cases, especially in warm weather, they should be fed three times a day. Do not keep it by them. Three gallons is enough for five or more hogs, according to size. When the hogs do not drink all the swill, take it away and turn the troughs over so as to clean them. In order to get the hogs to drink the swill, it is sometimes necessary to sprinkle salt, bran, oats or meat cracklings in the troughs, all of which are good and beneficial. Be sure that the hogs are all up around the troughs when fed, so that they all drink. Success depends a great deal on this; when they will not drink they must be drenched. (See directions for drenching.)

Diseased hogs should be kept under treatment from five days to two weeks, according to fatality of disease. Sometimes they recover very quickly if properly cared for, and at other times more slowly, the same as with any sick animal; and for this reason it is best not to despair and quit because they do not get well in a day or two. As they begin to improve, any kind of light food is good to feed them. It is very easy to tell when they begin to improve, as the urine will be more abundant and clear, and their discharges soft and regular. In using this medicine for sick hogs, allow no water or corn for four or five days, and but little corn for a few days after a cure is effected. This, again, is something that must be strictly observed; do not feed

sick hogs corn while under treatment, especially old corn. It seems natural for all feeders to want to feed corn if the hogs will eat it, and with this one thing I have more to contend than anything else. New corn is not so bad, because it is not so heating or hard to digest. Sometimes I put shelled corn into the swill barrel and let it soak. This is good after the hogs have begun to show some improvement, and is very good to entice them to eat; so are oats and meat cracklins

AS A PREVENTIVE, TO BE FED AFTER THE SICK ONES HAVE BEEN TAKEN OUT.

In feeding large herds, where it is not convenient to feed the swill, use the same medicine, one pint in one-half bushel of wet bran, which is enough for twenty or thirty head, and feed twice a day for three days. This will act upon the entire system and check the disease. It will be found the most reliable and cheapest remedy that can be used as a preventive, where they have been exposed to the disease, and the swill cannot be given. But it is better to give the swill as directed, to all the hogs, than to do any other way, as they get the medicine better. In the use of corn (at all times when feeding the medicine) feed lightly for a few days where the hogs have been exposed to disease.

TREATMENT FOR GENERAL USE.

This treatment is intended for all the ordinary diseases known to hogs, and can be relied upon, as it is a powerful blood purifier, and also acts as a diarrhetic. It prevents inflammation or ulceration of the intestines, breaks the fever, regulates the bowels, and destroys all intestine worms, thus relieving or curing the patient.

Six pounds or pints of the Cholera Remedy is just right for a barrel of swill of forty-five gallons, for ordinarily diseased hogs for general use, or as a

preventive, when hogs have been exposed to disease. But it is necessary sometimes to make a change in it to suit more mild or more severe cases, as follows: If for pigs, use one pint less, but for large hogs which are very costive or badly diseased, it should be made stronger, for it will act more quickly and better.

Sometimes very sick hogs, or pigs refuse to drink the swill made as described. If they do put them and those which have the diarrhœa by themselves, and use my Tonic Powder, one pint to ten gallons of swill. This they will take better, and it is reliable, especially in all cases of diarrhœa, as it is an absorbent, and improves the consistence of the stools; it is good in the case of gasses on the stomach, as it abates the pain and sickness. It is also a disinfectant, appetizer, and aids digestion. In using either medicine, avoid the use of corn meal in the swill; use bran, shorts, or midlings, two bushels to a barrel.

Hogs or pigs which have the diarrhœa can be treated very successfully in this way: Take sweet milk, let it come to boiling heat; in two gallons of this milk put one-half pint of my tonic powder. This is the best treatment for pigs ailing with scours (cholera infantum,) that can be given. If they are all still sucking the sow, give the swill to her also. But the prepared milk is not necessary for her, unless the pigs are very young. If the sow is not showing any signs of disease one feed a day for two or three days will do for her. But the pigs or very sick hogs that this milk preparation is made for, should have it twice or three times a day for a few days as the case may require. If swine which are being fed on warm feed in the summer, get sick, the swill that is given them should be fed cold. In winter the swill is best made blood warm.

HOW TO DRENCH A HOG.

In extreme cases it may be necessary to drench, but it should be avoided if possible, and should be done with great care, as an over-exertion will very often kill the hogs. They should be put in a close place where they can be handled with care, and should not be run or dogged, as it is liable to kill them. Then take a piece of small rope, stand beside or across the hog, put the rope in its mouth, and hold its head well up; give it only what it can swallow with ease, and be careful not to give anything while it is squealing, for the medicine will go into its wind pipe and kill it.

In drenching, the use of an old soft shoe is very good. Cut a hole in the toe of the shoe, then put the toe in the hog's mouth and pour the mixture in the mouth of the shoe; in this way the hog can keep its mouth shut so it can swallow, and it is not so liable to squeal. For a constipated hog that will weigh one hundred pounds, in one half pint of sweet milk or oil put one tablespoonful of the cholera remedy. Increase the amount according to size of the hog; give once, and if it still refuses to drink the swill, give the second time, which is as often as I ever found it necessary, until they would drink the swill, as described for sick hogs or general use, which should be given for a week or more, in order to cleanse their blood and system. In case the hog has diarrhœa use less medicine.

HOW TO GIVE INJECTIONS.

It is necessary at times, in case of extreme costiveness to use injections in order to save an animal. This is the case with hogs as well as other animals. Very often a hog's life can be saved in this way, and it may not take but a few minutes to complete the operation. It can often be done by one person, but in most cases it requires an assistant. Put the hog in a close place

where it can be handled quietly. Then the assistant, by the use of a wide board, can confine the hog to one side of the enclosure. The injection can now be easily given by the use of a syringe. Use soap suds and a small amount of turpentine, (a teaspoonful to one-half gallon of suds.) Avoid all violence, as any worry may kill the animal. In this way several hogs may be given injections in a very short time, when otherwise they would die.

EXTERNAL APPLICATIONS.

The use of external applications, properly applied, are just as necessary in the treatment of swine as they are in the treatment of other domestic animals or the human family, to produce counter-irritations, or by their cooling effects, to help to remove pain and fever, and relieve the suffering patient. Those I herein describe are cheap, easy to make and use, and their effects are beneficial. For sick hogs that are feverish, mangy or lousy, take one gallon of coal oil, one gallon of lard, two tablespoonfuls of carbolic acid, mix, make warm and grease the hogs well with it. When there are several hogs, they can be closely confined in a scale pen or any small inclosure, and the mixture put in a sprinkling-can and applied that way. This will remove all mange, scurf or lice, cleanse and heal sores, and assist greatly in removing fever. This preparation should be applied to every lot of diseased hogs when put under treatment, and if necessary, repeated. It is good to use on swine when castrating them; I consider it better than tar; it will also remove any scurf or itch with horses, cattle or sheep, lice on any domestic stock, or scurf on fowls, and is valuable to grease the heads and throats of fowls with when they are sick, especially with roup. In using this preparation on anything but hogs, it must be used carefully — just enough to dampen the affected parts.

In order to remove lice on cattle, fowls or hogs, leave out the carbolic acid; the coal oil and lard will do just as well. With fowls, grease them under the wings and about the head and throat. With cattle, grease them clear around the neck, and along the back to the tail, also in the flanks; this will soon remove all the lice. But in order to keep them off, good attention should be given to their surroundings. Their stables, houses or pens should be thorougly cleaned and whitewashed. If some carbolic acid is put in the whitewash it is good as a disinfectant.

Rheumatism liniment: Made by taking—

Turpentine, three ounces;
Ammonia, three ounces;
Gum camphor, two ounces;
Chloform, one ounce;
Opium, one ounce;
Arnica oil, one ounce;
Tincture of cayenne peper, six ounces;
Coal oil, one-half gallon.

Mix and always shake well when using. When this liniment is wanted, it is best to copy it off and have some druggist put it up, so as to avoid any mistakes, or at least the first seven articles; the coal oil can be added at home. This is an excellent remedy to remove any trouble arising from kidney disease, paralysis, lung or throat trouble, rheumatic or neuralgic pains, either with stock or the human family. Its penetrating powers are wonderful.

Carbolic acid, copperas or soda: These dissolved in water and used to wash or sprinkle the hogs with in the summer time, when very warm, are beneficial remedies. One pound of copperas or soda, dissolved in four gallons of water, or two tablespoonfuls of carbolic acid in the same amount of water, is the right strength for a wash. These, when well applied, have a great tendency to remove fever; also the same is true when they are administered internally; when given as

a drink, it should not be more than one-half as strong as when used as a wash.

A TONIC POWDER AS A PREVENTIVE.

As a fattening agency, or a tonic powder, as a preventive against disease, to be used at all times to keep the hogs in good health, and make them thrive fast, use my tonic powder, one pint in one half bushel of wet bran or ground grain of any kind, except corn meal. This is enough for twenty or thirty hogs at a time, and should be given once or twice a week, or as their condition may required it. It should always be used when commencing to feed corn at any time, or on a new herd of hogs which are brought on the farm, so as to guard against disease. A small expense at the first indication of disease, or as a preventive, will save hundreds of dollars in the end. This mixture, will be found invaluable to use with hogs at all times, especially when they are running on a dry or stubble pasture, or black mucky ground, and also when on a heavy growth of matured clover, or when being fed on dry corn, either of which is liable to cause constipation or sickness. They should receive it regularly once or twice a week. In feeding large herds the mixture can be made in a box, and then put in barrels, and taken out in the field with a team, the hogs all called up and then fed on the ground. In feeding it in this way it should be put out quickly, so they all get it. I have fed some three hundred hogs at a time in this way with good success.

This tonic powder will keep them in a high state of health and make them thrive very fast, especially where they are being highly fed, or running on mast the latter part of winter or in the spring; mast is then very dangerous, especially jack oak (red oak) acorns. But where hogs have been exposed to disease, or are diseased, use the cholera remedy, and use in swill at all times if possible.

TREATMENT OF SOWS WITH PIG.

For diseased sows that are with pig use the cholera remedy, one half-pint to four gallons of sweet milk or any good slops. This will prevent abortion, and is good to give to sows a few days before and after farrowing; it will keep them from eating their pigs. This mixture is a powerful anti-spasmodic, and will prevent convulsions of various kinds, spasms of the stomach, bowels, etc. It is also cooling and allays fever and prevents constipation, which causes sows to eat their young; it is hard to break them of this habit if once learned. In fact the only sure cure for an old habitual pig or chicken eater is the butchers' block.

Diseased sows which are with pig will have to receive good attention, and in time to prevent them from losing their pigs, for when once they are badly diseased they are almost sure to lose them, and often do so when under treatment. This has lead some to believe that it was caused by the medicine, but such is not the case. The medicine used as directed will not do any harm, unless an overdose is given, when it may make them quite sick for a few hours, but they will soon recover. Sows that are half gone or more with pig should be kept away from other hogs. They are very often injured by being overlayed, or otherwise, and in that way lose their pigs.

Where hogs are confined in close, small quarters, it is important that some absorbent be provided. Straw is objectionable, as it wears out quickly, and becomes damp and foul. Hogs are apt to become overheated at night on account of their crowding propensities. When litter of any kind is provided, the danger is greatly increased. Straw is one of the poorest conductors of animal heat that is known, and as a consequence, its use for littering is highly objectionable. Leaves or corn fodder are better than straw

when litter of any kind is used, as it does not become so foul and warm. Dr. Law says: "Dry earth is better absorbent than anything else, and conveys away animal heat, although not so rapidly as to chill the animal." This is one reason why I recommend out door treatment for sick hogs at all times, when the weather will permit it, as the hogs will root up the ground to form a bed, and sleep in the dry or fresh earth, which has a great tendency to reduce the fever. Then again, they can be kept cleaner and separate, and do not come in contact so much with one another or with their poisonous discharges; and they also have the benefit of the fresh air, or in cool weather, the warm sun.

SUMMARY OF DIRECTIONS.

The directions for treating hogs in large numbers having been extended in order to be more plain and to give the reasons why such treatment is used, it may be well to repeat the directions for the different medicines used.

For sick hogs use my cholera remedy; 6 pounds or pints to 45 gallons of swill. To make this swill use bran, mill feed, ground oats or oil-cake meal, (never use corn meal) and feed only what the hogs will eat at each feed, twice or three times a day. Keep the troughs clean by washing them out with water and carbolic acid or coperas.

As a tonic or preventive for general use, use my tonic powder, which will keep the hogs healthy and cause them to fatten very fast. This is also very beneficial to use with ailing pigs, as it is not as strong as the other, and they will take it more readily.

INCURABLE CASES.

In treating swine, as well as any other domestic stock, especially when in large droves, and when the disease has assumed a malignant form and they have

been allowed to run for some time without treatment, there are almost always some incurable cases. And anyone claiming a specific "cure all," for hog cholera or swine fever, cannot be too severely condemned. Such a claim should prove to any one, who stops to think, even for a moment, that such treatment is a humbug. As long as we have no specifics for the cure of the diseases of the human family which we have every means of treating promptly, why should we expect it for so fatal a disease as hog cholera or swine fever. These fatal diseases with swine can be told by the following symptoms, which even under good sanitary or medical treatment, unless promptly attended to, seldom recover. First, severe constipation, accompanied by high fever, rapid emaciation, lameness, and often sloughing off of the ears and other portions of the body. These are symptoms of typhoid fever. With typhoid pneumonia, these are accompanied by a severe cough, and when once either disease has assumed such a form that chronic diarrhœa sets in, and the ears and the body become cold to the touch, then the case will prove fatal. This is also the case when blue, purple or red spots appear under the throat, chest or belly. This shows that inflammation of the lungs or bowels, or both have set in, and the case is most always hopeless. The same may be said of those patients which bleed at the nose and ears, or have bloody passages. This is caused by hemorrhage, by the bursting of the tissue linings of some of the vital organs, bowels or intestines. Frequently the disease assumes a gangrenous form and settles in the limbs, and often one or more slough off, especially the feet. They will live in this way sometimes a long while and frequently recover, but never do any good. They are a loss to their owner and had better be killed. What may be termed cholera, with vomiting, purging and

severe cramps, as if attacked with colic, will soon prove fatal if not well treated. When the patients survive a few days, they may be, and frequently are, affected as before, described. Any of these fatal diseases are known under the name of hog cholera, swine fever, or swine plague, and in treating them not only must the best of medical means be used, but the best of sanitary means. When this is done, and in time, before the disease has assumed a malignant form, almost all the hogs can be saved. In treating any herd, even when afflicted in the most violent form, if well cared for, the most of them can be saved, and the disease kept from spreading. Therefore it is much better to treat them than to let them all die, or to ship them to market to be eaten by our fellowmen.

WHY MY TREATMENT IS A SUCCESS.

Very frequently in talking with farmers and professional men, they will say, "If the 'germ theory' is correct, anything that would be given the hog that would kill the germ, would kill the hog." This is no doubt true to a certain extent. But I do not claim that the medicine I use destroys the life of the germs directly, but what I do claim is that swine affected with swine fever, known as hog cholera or swine plague, can be given medicine that will so affect the system as to check and prevent the propagation or multiplication of the germs, and have such an effect upon the bowels and urinary organs as to cause the poisonous germs to be passed off through these channels; and these poisonous discharges, exposed to the air, soon lose their poisonous effects. Therefore, when treating in the open air, and especially when the hogs are allowed some range so that they do not come in such close and constant contact with their passages, the disease can be checked and cured.

The main points in treating any diseased animals are first to know what ails them; then be sure that the medicine that is given them will have the desired effect to assist nature in casting off the disease. After much experience in treating hogs, I have discovered reliable remedies for the cure and preventive of cholera, and have used them in my practice with marked success. I do not claim that this is the only treatment that will cure diseased hogs of hog cholera, but it is the only reliable one that has ever come under my observation, and is the most practical treatment I have ever seen published; I hope it will be the means of saving the swine of not a few farmers.

CHAPTER XIII.

LOCAL DISEASES OF SWINE AND THEIR TREATMENT.

LOCAL DISEASES OF SWINE — THUMPS — PNEUMONIA — DIPHTHERIA — KIDNEY DISEASE — INFLAMATION OF THE BRAIN — FOUNDER AND RHEUMATISM — CATARRH — PILES — WORMS — SWEATING AND SCOURS — BLOOD POISON — MANGE AND LICE — BLACK TEETH — FROSTED HOGS — PREVENTION BETTER THAN CURE.

LOCAL DISEASES OF SWINE.

ASIDE from cholera and swine fever, swine are subject to many diseases more local in their character, but they may prove fatal if not well treated in time. In describing these local diseases and their treatment, I shall endeavor to be as brief and plain as possible, giving the symptoms so that the general reader can interpret and understand them and make the treatment of these diseases a success. In referring to the different kinds of diseases, I will give the names commonly known to farmers and stock men as well as the scientific names.

THUMPS OR PALPITATION OF THE HEART.

Occurs very frequenty with pigs or young fat hogs, and is often caused by an accumulation of fat around the heart or lungs, which interferes with the action of these organs. Weak and deficient hogs, resulting from inbreeding too closely or breeding from inferior stock, are more subject to it than more vigorous ones. Thumps is also caused by colds, resulting in congestion of the lungs. To be cured this disease must have

prompt attention and good treatment. The characteristic symptom is rapid and laborious breathing, like an over-excited animal. Treatment: Give one-half of a teaspoonful of tartar emetic on the tongue once or twice a day, or, if it is a large hog, give a teaspoonful. It will check the excessive action of the heart (which produces the noise from which originated the name thumps). Then bathe the chest and sides over the heart and lungs with the rheumatic liniment, or coal oil and turpentine, equal parts.

LUNG FEVER — PNEUMONIA.

This is a common, dangerous and acute lung disease and commonly called lung fever. It is caused by the animal contracting cold, and by the blood being impoverished, and by the non-removal of the natural acids by the liver and kidneys. Pneumonia is always proof of diseased kidneys and liver. Indeed this is true of many other lung disorders. Symptoms: It commences with a severe chill and fever, accompanied by a deep, hoarse cough, and difficult, locomotion seeming to be a weakness in the back. Treatment, the same as for thumps. Or where there are very many hogs use my cholera remedy as directed, and sprinkle them well with lard, coal oil and turpentine, using lard, 1 part, coal oil, 1 part, turpentine $\frac{1}{4}$ part. Give them soft, laxative food, and good dry and warm quarters. Remember that swine afflicted with any lung trouble must be kept warm and dry, and their beds not allowed to become foul and damp. Lung diseases are very prevalent in the winter, and very hard to cure on account of the cold and changeable weather and the want of suitable quarters.

STRANGLES, SORE THROAT, QUINSY, DIPTHERIA.

Diptheria with swine is known by all of these names, and can first be observed by the difficult

breathing and swallowing. The throat becomes sore and swollen, and in the more advanced stages in a diptheria form, the animal often sits upon its haunches like a dog in order to breathe, and frequently strangles and dies in that position. Very often this disease becomes epidemic, similar to distemper or epizootic with young horses, and proves fatal. It is in a certain degree contagious; that is, by coming in contact with the shreds coughed up by the diseased ones, well hogs will take the disease as readily as it is communicated by the human family, and owing to this, in its fatal type, it is frequently mistaken for cholera. It is caused by sudden changes of atmosphere. Allowing hogs to pile up in straw-stacks, manure heaps and other warm places during cold weather is one of the most fruitful causes of this disease. When they are allowed to pile up in such places, upon coming out, especially on a cold morning, the cold air strikes them, and any one must know that such sudden changes will produce this or some other more fatal disease, and especially with pigs or young hogs.

Treatment: Separate the sick from the well ones, divide them up into small lots, and give them good, dry quarters. With those that are very sick give each one once or twice a day, as a gargle, a tablespoonful of powdered sulphur in water, and bathe the throat and chest well with the rheumatic liniment, or turpentine and coal oil, equal parts. Those that are not diseased should not be allowed to run with the sick, but should be kept separate, and if they are all given my tonic powder it will be found very beneficial and put the system in a healthy condition.

KIDNEY DISEASE — PARALYSIS OF HIND QUARTERS.

With this disease hogs become weak in the back, the hind parts will wriggle about, and finally the animal will sit down on its haunches; after some

effort it will get up again and run rapidly straight ahead for some distance, then swing to one side awhile and then go to the other side, and finally get down and be unable to rise again, and drag its hind parts about until death occurs, which is almost sure to follow unless relief is given. Treatment: Give on tongue a teaspoonful of tartar emetic once or twice a day for a few days, and use freely the rheumatic liniment.

BLIND STAGGERS — INFLAMATION OF THE BRAIN.

This disease occasionally occurs with hogs. Symptoms: At first the animal becomes dull and stupid, the eye red and inflamed, and the bowels constipated. In a short time, if not relieved, the animal runs wildly about, usually in a circle, seems blind, and breathing becomes rapid and laborious. Treatment: Avoid the use of corn, and feed soft laxative food, such as bran, or oil-cake meal in sweet milk or swill, and give at a dose, two tablespoonfuls of castor oil twice a day, then bathe the head between the ears and eyes with the rheumatic liniment, turpentine, or any good strong liniment that will produce a counter irritation.

FOUNDER AND RHEUMATISM.

Founder is caused by over-feeding and lack of exercise. Symptoms: Loss of appetite, and so lame and stiff they can hardly get around. Treatment: Give on tongue a tablespoonful of powdered alum. In very severe cases repeat this dose in a day or two, and avoid the use of corn. Feed light and soft food of any kind and turn them out for exercise.

Rheumatism is something that swine are as subject to as any other stock. It is often caused by close confinement, and especially on board or stone floors, or when being compelled to sleep in a damp and cold place. Symptoms: Similar to founder, being sluggish, with indisposition to move, accompanied by fever, pain and swelling of affected parts. Frequently the swell-

ing is of a wandering character and changes about from one location to another. Treatment: Use my cholera remedy and bathe afflicted parts with the rheumatic liniment, which will affect a speedy cure.

SNUFFLES, — CATARRH.

Snuffles with pigs is caused by catarrh in a chronic form, caused by repeatedly contracting cold and being neglected, and frequently by improper breeding, the same as pigs with thumps. This is thought by some breeders to be hereditary, and no doubt is, when those badly afflicted are used as breeders. But this can be said of any other badly diseased hog; unless they are perfectly cured they should not be used as breeders. The treatment for this disease is light and soft food at all times for a week or more, in which can be given my Tonic Powder with good results, as it will cleanse the system and purify the blood, which will effect a cure. Carbolic acid used freely about the pens and troughs will also produce good results.

PILES WITH HOGS

Piles is a disease which frequently occurs with hogs, but is not dangerous, as it seldom, if ever, causes death, but is very painful, and the animal so affected will not do well unless cured. Piles is seldom discovered until the knots are visible, but occasionally may be, after the disorder has so advanced that blood passes off with the excrements, or the hair around the anus is blood stained It is caused by the use of rich and heating food, or sour slops. It occurs more with still fed or pen fed hogs than any other kind, and often with hogs that follow cattle. Treatment: Avoid the use of corn, feed light with soft food of any kind, or turn them on grass. An injection of warm salt water or salt and vinegar is very good, but when the rectum is much protruded it should be replaced first, before giving the injection. This can be done by

oiling it with any kind of oil and by carefully pressing it in.

INTESTINE WORMS.

These sometimes accumulate to such an extent in hogs as to be injurious to them, and occasionally cause death by strangulation, also cause constipation and unthriftiness. Symptoms: More or less coughing, hair looks rough, appetite good, but they do not thrive. Cause: Close confinement or dry and musty food, stagnant, snow or ice water, and neglect to give them the needful care in the way of a change of the proper kind of food or remedy, to overcome the evil effects of the above named causes. Treatment: Either one of my swine remedies used in soft, laxative food, will effect a speedy cure, or soda, copperas and rosin equal parts is also good.

SWEATING, SCOURS, CHOLERA INFANTUM.

Sweating pigs. This is caused by a lack of vitality, the same cause that produces night sweats in human beings. Treatment: Divide the pigs up into small lots and keep them out of their beds during the day. Compel them to exercise and use my tonic powder, as for general use, for a few days, which will remove all this trouble.

Scours — Cholera Infantum. Many of our swine breeders sustain considerable loss annually by their pigs dying from the disease known as scours, which is caused by the bad quality of the sow's milk. The disease is more apt to make its appearance when the sow has been fed upon dry corn or musty food. It generally attacks them within two or three days after their birth, but sometimes after they are much older. I have never failed to check and cure this disease when I used the treatment as given on page 194.

BLOOD POISON, SCROFULA OR CANKEROUS SORE MOUTH, are of frequent occurence with unthrifty and badly kept pigs, and often caused by the use of musty and unwholesome food, or the bad quality of the sow's milk. Very often dirty pens and dirty udders will make young suckling pigs sore about the mouth and head, and frequently the tusks of young pigs are so prominent as to cause them to bite and lacerate their lips, which become sore, and, in either case, the inflammation will spread. Treatment: The same as for scours, and apply externally upon all the parts where any sores appear the following mixture: Coal oil and lard, equal parts; to one half pint of this add one tablespoonful of carbolic acid; this will heal the sores. This is good to use on hogs when being castrated, or on very mangy ones. When either the pigs or pens are dirty, both should be thoroughly cleaned and kept that way. Sometimes pigs have what is called "measles"—pimples all over the body. They usually appear first about the head or flanks, and are caused by the blood being impoverished or poisoned. This, if neglected, will very often turn to scrofula or cankerous sores. But if treated as directed, and when the hogs, if confined, are turned out on the fresh ground, they will soon recover.

MANGE AND LICE.

Mange, like many other diseases of the hog, is infectious or contagious, and is similar to the itch in the human family, or scab in sheep. It is quickly and easily cured by using the mixture thoroughly as given above, or take coal oil or black oil, such as is used for machinery, and lard, equal parts; make warm, put it in a sprinkling can, get your hogs in a close place and give them a good sprinkling. This rids them of all mange or dandruff, opens up the pores, and helps to promote health generally. The same mixture is good

to use for lice, in fact is the best thing that can be used, and should be applied once a month or every six weeks; this will rid them entirely of the pests. I have used this for the past fifteen years with good results, and have never had any cause to change it. This is one of the first things that should be done with a lot of diseased hogs after you put them under treatment. It is of great benefit to them, and should not be neglected. In extreme cases of mange it may be well to give the animal a thorough washing with soap and warm water, then apply the first treatment as given. Never use coal oil alone, especially in hot weather, as it will scald the hog and cause the hair to come off.

Lice are a great pest to hogs as well as other animals, and one they should be kept rid of, for there is no doubt they will do better with them off than on, and the time they are employed in rubbing them off, as some let them do, could be more profitably employed putting on flesh by keeping quiet. Treatment the same as for mange. Some make use of sulphur and wood ashes, coal oil or black oil alone, to sprinkle their hogs with. All are bad and will scald the hair off, and often do harm. The free use of sulphur given internally to hogs is very injurious in cold weather, as it opens up all the pores and makes them very sensitive to cold.

The claim that some make, that lice cause cholera, is a falacy; also the claim that they lay an egg that produces a worm, which enters the hog through the ear and causes death. A louse is a louse, although there are many species of them. They never turn to any other insect, and as for their causing cholera with hogs, it will be time enough to claim that after lice have caused cholera with the human family.

In closing the swine department, it may be well to once more recall the mind of the reader to certain facts

regarding swine diseases. The old saying, "an ounce of prevention is better than a pound of cure," is a true one in swine raising. Therefore I will offer a few brief suggestions which if born in mind, may be of benefit to many. It should be remembered that many diseases of swine are infectious and contagious, therefore every precaution should be used to prevent the introduction of any disease into the herd or community. Aside from the many ways spoken of in this work as to how the swine germ may be transported, and introduced, the evil which spreads the disease over the greatest scope of country the quickest, is driving diseased hogs along the public road, or having them exposed where they have died. I have known whole neighborhoods for miles around to be inoculated in this way. Hogs that are sick, or that die of cholera or any other sickness should never be transported over public highways.

In buying hogs for feeding or breeding purposes, great care should be taken not to buy those that show any indication of disease, and if they are to be shipped home in cars, see that the cars are clean and have been sprinkled with air-slacked lime or a strong solution of carbolic acid, as a disinfectant, before loading them.

As to the feeding and care of swine that has been extensively discussed in this work; no rule can be given that would be or can be adopted by all feeders; hogs, like other stock, should be fed regularly twice or three times a day, and only be given what they will eat up clean, and should have a change of food, a grass or wood lot for range, the use of pure water, and salt regularly twice a week.

Now I am aware that some persons claim that hogs do not need any salt, but that does not prove it to be so. I have also heard people claim that sheep did not need any water, and one claim has about as

much foundation as the other. Salt, and hickory ashes, when they can be procured, is one of the best things that can be given hogs, and is something that they should have once or twice a week.

The best plan for salting hogs is to make a square box, $2\frac{1}{2}$x$2\frac{1}{2}$ feet 6 inches high, then fasten this on to 4x4 pieces. Set it in the lot or field, and put large pieces of rock salt in it so the hogs can have access to it all the time. The tonic powder can be mixed with bran or oats and put in these boxes twice a week for the hogs, and I am sure you will never have sick hogs to contend with, as it is a blood purifier and appetizer, which acts beneficially on the stomach and kidneys alike, and stimulates the entire system, thus ridding it of any parasites or disease, making the meat perfectly healthy for use.

This should induce every farmer to take care of his hogs, and not only produce healthy meat for his own use, but for that of his fellow men, for it has been practically demonstrated by eminent physicians that diseased pork has caused consumption, trichinæ, scrofula, and other fatal diseases, with the human family in the United States, to greatly increase in the past ten years, and is also well known that there is at least one-third less pork consumed, than there would be, on account of diseased hogs.

As shown before in this work, the investigations of scientists have proven that swine once afflicted with cholera, are less liable to its attacks than those that never had it, and it has been practically proven by the author that if they are properly treated, so that the system is thoroughly cleansed they are more profitable as breeders, than young hogs that were never affected. This again should induce every breeder who may be so unfortunate as to have sick hogs, to give them proper attention and treatment, and retain the best

thus saved for breeders. The only way this terrible scourge can be controlled is for every swine breedsr or feeder to take an interest in it, and make use of the best method of treatment that is known.

BLACK TEETH — SMUT POISON.

Through mistake these subjects became misplaced, but as I am so often asked questions concerning them I will here mention them.

Very often I am asked the question, do black teeth kill hogs? Or some one will say that a certain person was going through the country pulling out the black teeth of hogs, saying that "they were what caused hog cholera." Now this is all a mistake. Of course hogs may occasionally have a bad tooth that would be better out than in, but not often, especially if it is an upper jaw tooth; for then corn or other food will pass through the cavity caused by pulling the tooth into the nose, and cause more trouble than if it had been let alone. Therefore, I will say that if anyone wants to pull out your hogs' teeth, tell him you will leave them alone to crack corn with.

The same is true of smut poision. If a hog never died until it died of smut poison or black teeth, there would be no use for hog medicines. What are called black teeth is a symptom of disease, and shows a necessity for a treatment of the general system. All pigs have the little black teeth in the middle of their jaws, which worry people so much. These are the teeth which make the tusks. When the pigs are young, these teeth are very small, but sometimes so sharp that they lacerate their tongues and cheeks so that they can not nurse or eat well, and they do miserable, when a pig shows these symptoms, these teeth should be broken off smoothly with a pair of pincers.

AMERICAN POULTRY.

A TREATISE ON

PROFITABLE POULTRY RAISING,

WITH INFORMATION AS TO THE BEST METHODS OF REARING AND HANDLING ALL KINDS OF POULTRY, WITH A REVIEW OF THE VARIOUS DISEASES TO WHICH THEY ARE SUBJECT, AND THE MOST PRACTICAL TREATMENT THEREOF.

CHAPTER XIV.

PROFITABLE POULTRY RAISING.

POULTRY RAISING—IMPROVING BREEDS—DIFFERENT BREEDS—PRACTICAL SUGGESTIONS AS TO HATCHING, REARING, AND CARE—THEIR DISEASES AND HOW TO TREAT THEM.

POULTRY RAISING.

THE raising of poultry, like the raising of other domestic stock, if conducted on scientific principles, can be made much more profitable than if conducted on a haphazard plan. This business, probably more than the raising of any other kind of stock, in order to be profitable, depends largely upon the situation. When one is within easy access to a large city, where the market is good at almost all times of the year, and both the fowls and eggs can be sold directly to the consumer or dealer, the profits are much better than when the products have to be sold in a village or small town, where the supply always exceeds the demand, or else to be shipped some distance to market, and then most likely pass through a commissioner's hands. When poultry raising is conducted on a small scale, it is much more profitable correspondingly, and especially when connected with some other business, than when conducted alone on a large scale. Therefore, when experimenting with a few fowls, to ascertain what can be done, one must not suppose that the same profits could be made from a large number; for with poultry, as with swine, as the number increases, the chances of success

diminish; not only do the advantages in caring for them diminish, but the danger arising from fatal diseases greatly increases. The question as to whether poultry raising pays, is a question settled long ago by the farmers' wives. As a farmer remarked: "Any housewife can make from her dairy and fowls more than any two men can make raising cotton and corn, and with one-tenth the capital and at one-hundredth part of labor. Many a man is working like a slave, groaning over his debts and troubles when freedom is just within his reach. It is in the improved breeds of fowls when properly cared for if he only knew it." This statement may be a little strong, but still for the same amount of capital and labor invested, there are but few things about the farm when properly managed, that make as good a return as the poultry yard, and there are but few things with most farmers that are as badly neglected, and for farmers' wives and daughters who desire to do some extra work that will pay in cash, I know nothing that will pay as well in proportion to the time and capital invested as a small flock of fowls well cared for. It is a certainty that raising poultry for egg production pays the farmer. As a general thing the fowls that the farmer keeps in his barnyard and on which he expends but little, pay best of all his live stock, but when attention is especially paid to fowls, and they are properly fed, housed, and attended, after deducting the cost of keeping, care, and interest from the amount for which their eggs sell, there is in nine cases out of ten, a larger balance on the credit side of the ledger than is found in connection with any single department of farm industry.

A little watchful care is needed, and a little patience to go with it helps to make the raising of poultry pleasant and profitable. In early spring, when there is much to do in watching the breeders, making new

nests for the layers, gathering and assorting the eggs for hatching, and anxiously waiting for signs of broodiness among some of the early layers, patience and care will be profitable investments. These little jobs, the odds and ends of the poultry business, seem trifling to those who do not keep poultry, but still they must be attended to in time if we desire to make the pursuit satisfactory and remunerative. We may say there is no real labor about it, think it is more of a duty than a task, and we feel better satisfied at the end of the season when we see something for our patience and care.

To be successful in poultry raising one must have a liking for the pursuit. Few ever make much progress or attain distinction if they feel that it is a forced task to keep fowls for what they bring to the pocket. Of course remuneration should be one of the primary objects, but at the same time one should like them and care for them willingly, though it is a matter of dollars and cents. If we give the object of poultry keeping a sensible thought, we will find that it gives recreation, amusement and daily pastime to the attendant; and when we see what we have accomplished during the hours of relaxation from other cares, we will be rewarded for our efforts.

Selected poultry suggestions: By carefully reading and observing the following notes, and adopting their advice as far as practicable, poultry raising can be made profitable in any locality. A very important matter in the keeping of fowls on a large scale is to secure a near market for them. Hotel-keepers, restaurant proprietors, boardinghouse-keepers, etc. will often buy in large qantities and at good rates, when the "goods" suit and the seller is deemed reliable; but if the dealer on a large scale has only the general market to rely on, he may soon conclude that poultry keeping

does not pay. It is a dangerous business to enter upon when not well considered. The man who wishes to understand as much as possible about poultry keeping should buy and study the leading books and papers on the subject. Avoid those published in the interest of some particular breed or breeder. The farmer who objects to books giving instructions on this or any other subject, is as much at fault as a doctor or lawyer who should claim that he has no need of books. His profession would vote him a fool at once. The pleasure and interest that are awakened by the first step in the right direction go far towards gaining the experience necessary to success. Profit and loss do not depend upon accident or chance, but are necessary consequences of wise or unwise methods of procedure. I have very frequently heard ladies say: "I cannot raise poultry; I have no luck with them; they all die for me, or something kills the little ones, or the hens will not lay." Let me tell you, kind friends, that there is no such thing as luck. If your neighbors are more successful than you, it is because they have better methods, or are more dilligent and attentive to their fowls.

Very often, when ladies complain of having no luck with their poultry, and when the case is investigated, the cause is found that their fowls were allowed to roost in the trees during the winter, with no feed except what they got from around the corn-crib. Poultry, like other animals, require housing in winter and a variety of feed, and if otherwise cared for prove unprofitable.

There is nothing connected with poultry raising, whether for exhibition or market, that a woman cannot do better in a general way than most men. Poultry keeping is a healthy and engrossing pursuit. It is pleasurable as well as profitable; it affords amuse-

ment, and well repays for the time and labor spent while engaged in it; but it should never be undertaken by any but those who take an interest in it, and find pleasure in the work. A flock of hens will pay for themselves before they are one year old, if they are rightly cared for. You can then sell them, if you choose for a good price, and raise another lot, but it is not advisable to do so as the second year is the most profitable; but do not keep them after they are two years old, for after that age they do not pay so well.

IMPROVING BREEDS.

Those having the same kind of stock that has been on the place for years and years without crossing and improving should look to breeders for better stock than they have, or they ever had. They will be surprised to see what a difference it will make to introduce into their flocks one or more purely bred cocks.

While you are thinking of ornamenting your homes, stop and consider what an ornament a beautiful pair or trio of Wyandotts, Dark or Light Brahmas, Hamburgs, Cochins, or some of the pretty strains of improved fowls would be. Five dollars invested in inanimate ornamentation would not attract nearly so much attention, nor receive the admiration of visitors as much as the same amount expended in high class fowls. Did you ever pass a farm yard where there was a flock of improved poultry that you did not have to stop and admire their beautiful uniform bodies, plumage, and appearance? It always creates a sensation to get a valuable pair or trio of fowls from a distance. The neighbors will speak for a pair of the offspring, or setting of eggs, and were you willing to let them go you could get several times the price of the original fowls the first season for their produce. This is not merely supposition, but it is true. Five dollars

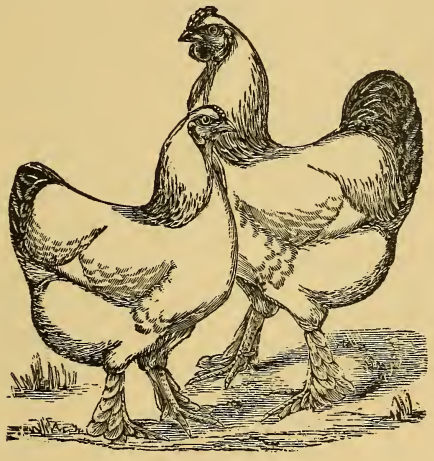
per trio seems a large price, when common fowls sell at three dollars per dozen, but with good care a person can raise enough to pay for the parent stock the first season, and sell the produce at three dollars per dozen — the price of common fowls. So there is no money to be lost, even at the worst calculations. Nothing reproduces so fast as poultry. A pair of fowls reproduce themselves from twelve to forty times a year, and at the end of the year the produce is in full development, and the fac-simile of the parents ready to be sold at the same (considered by some) fancy prices.

It costs no more to raise the best breeds of poultry than the common barn-yard fowl, while the returns are more than double. Get a setting of eggs from some reliable breeder, and convince yourself of this fact. In order to increase the size of common fowls, the cock selected should be a Cochin or Bramah, which will give a heavy feathering, compact size and small comb. Such a cross will lay earlier than the pure Bramah or Cochin, and make better nurses for chicks. This cross is well suited for cold climates. For warm climate, or where quality of flesh is desired, or the production of eggs, or as an out-cross for any of the large breeds, the Leghorn will prove profitable. It is only an amateur who is caught with the idea that a new and much-puffed variety of fowls, just discovered or imported, is better than anything yet known Only give the old sorts good care and they will do well enough, and often a great deal better than new breeds at fancy prices.

LIGHT BRAHMAS.

The light Brahma fowls are handsome birds when in full feather, and doubtless have as many merits, all things considered, as any other breed, if not more. A new beginner with poultry can hardly do better than to try this old reliable and valuable breed. But in

saying this I am not advertisıng them or condeming other breeds. A cross of the light Brahma and white Leghorn, makes a very valuable fowl. Some persons prefer a cross of the Leghorn in order to gain early



LIGHT BRAHMA.

maturity, and increased egg production but object to the cross, as the infusion of Leghorn blood is so potent in greatly reducing the size, which is not desirable in market fowls. Such reduction, however, will only occur for a single season, as the larger breeds of cockerels may afterwards be used. The Leghorn cross will always be found to be a very valuable one.

THE OLD BLUE HEN.

The "old blue hen" is a term applied to the extra good common hen. She is found on every farm and enjoys a reputation second to none. She has per- or med her duty faithfully and well, has always been a favorite, and is never forgotten. Long after she has passed away her qualities are extolled and her merits compared as a standard of judgment with hens of very other breed. She is the model by which the usefulness of all other hens are measured, and often

she is pensioned and spared from the knife as a reward for her extraordinary capacity of egg production.

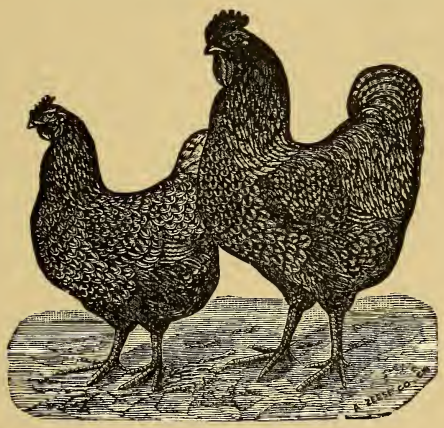
But, somehow or other, no farmer ever succeeds in raising a whole flock like the old blue hen. He never has more than one of that kind. Carefully he selects her eggs for sitting, and cautiously he watches the nest where she lays in order to secure them. He places the eggs under a good hen, or allows the old hen to hatch them herself. The chicks soon come out sprightly, grow fast and arrive at maturity, but the pullets do not prove old blue hens. They usually turn out to be the most worthless scrubs on the farm, no two being alike in shape, color or size, and finally the farmer comes to the conclusion that there is nothing stable in breeding fowls for a special purpose.

But the trouble with farmers in such cases is, that while they are particular about the old blue hen, they have not noticed that they have no old blue rooster. They forget that the rooster is everything, and that he impresses his qualities upon all his offspring. If the old blue hen is expected to produce something excellent when mated with a worthless barnyard mongrel, she is expected to do what would not be looked for in cattle, sheep or other stock. Farmers, the moral of this is that you should use thoroughbred males only, for in no other manner can a common flock or breed of any stock be improved.

PLYMOUTH ROCK.

The Plymouth Rock is a very valuable breed in most respects, being an average layer, quick maturer, and of good size, and void of the leg feathers so much disliked by most farmers. They are a quiet but industrious breed; and cross well with the common breeds. They are the old Dominique improved, and if you remember the old saying,

"Never mind the old speckled hen;
You had better let her be,
For she lays two eggs every day,
And on Sunday she lays three."



PLYMOUTH ROCK.

The improvement though, has not been in the laying quality, as much as in the form and shade.

AMERICAN DOMINIQUES.

The Dominique is thoroughly an American bird, and it combines many of the good qualities of the purely bred varieties. Its hardiness, symetry and general utility are only more appreciated by the addition of harmony of colors — being so blended as to be always pleasing to the eye. Like memories of by-gone days, always growing in remembrance, the American Dominique, so justly entitled to the appellation, comes to the front amidst the furor for something new, claiming our attention for long-established virtues and for its present improved appearance.

POULTRY INVESTMENTS.

"Nothing risked, nothing gained," is an old adage that is nowhere more applicable than in the poultry business; and there is no business in which it is so frequently ignored. So many are under the impression that the chicken business is too "small a fry" to invest

anything in it, and that any one who invests his money in that way is simply throwing it away. The business certainly cannot be started on nothing, and run itself; those who make money in that business have more than the usual amount of skill and business tact.

We must admit that an ordinary amount of common sense and judgment is required to carry on any branch of business successfully, and the poultry business is no exception to the rule. But a corresponding amount of capital is needed to meet the requirements of the trade, and to insure comfort at least. What would you think of a man starting out to make a fortune (or even a reasonable amount of money) on stock of any kind, who would start by procuring, or having already on hand, a poor, degraded lot of scrubs, and then turn them out to gather their living as best they can, leaving them to take shelter from driving storms under trees or behind fences, and should they come to the barn to seek shelter, to be driven back to seek their own shelter? You would soon pass judgment on him and mark him down as doomed to the misfortune of failure, which would seem inevitable, for it would be unjust and contrary to the laws of cause and effect for such a system to succeed.

I need not make the application; you can see at a glance that the shoe fits, and I suppose you will have to wear it until you can make a change for the better. I wonder how many of our readers have ever seen fowls roosting in the trees, on fences or under a few loose boards in mid-winter, simply because "anything is good enough for the chickens?"

I imagine many have seen such a sight, and perhaps in their own yards; we hope many have repented ere this, and are on the high road to success. Persons keeping fowls in such a manner have no need of the huckster until nearly June; perhaps not then,

for men do not gather figs from thistles, nor eggs from hens that are so nearly frozen to death that the food they receive is scarcely sufficient to keep "soul and body together." It would seem that many of us do not deserve eggs, or even fowls, for such inhuman treatment. There is no branch of farm economy that will pay such a handsome dividend on the capital invested as the poultry business, where it is carried on in a systematic manner. Comfort must always be the ruling watchword which necessitates a moderate investment in food and shelter.

MAKE CAREFUL SELECTIONS.

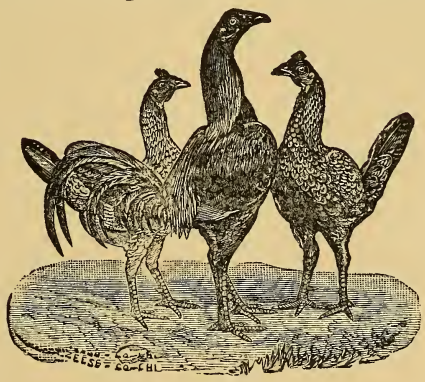
In order to keep the character of a flock to full vigor and stamina it is important to be careful in selecting only those that are the best. If you intend to discard anything, let it be from the bottom. Always reserve the best to breed from. The transmittal of good qualities can be done only by those that are perfect, and he who is careful in selecting only those best fitted for the purpose of improvement, not only elevates the poultry in his own yards, but confers a favor and benefit on overyone who patronizes him. It is by sound judgment, careful observation and unceasing watchfulness that the present breeds are becoming better and better as time passes along. By all means, if poultry is an object, do not trust to any haphazard risks, or unfounded hopes, but rely solely on the best attention that can be personally given.

The fall is the time in which to make selections of the pullets that are intended as winter layers, and it is best to reserve those that were hatched early. It must be considered that fowls are adapted for particular seasons, according to the breeds. The Leghorns and other small breeds commence laying very early; the pullets hatched as late as the beginning of June sometimes begin to lay about Christmas, but those a

month older will give more satisfactory results, but unless given warm quarters and the best of feed, rarely make good winter layers. The large breeds — Brahmas, Cochins, and Plymouth Rocks — require more time during which to grow and mature, and pullets of such breeds, when intended as winter layers, should be hatched as early as possible, March being the month preferred, but later-hatched pullets of the large breeds begin to lay early, and produce quite a number of eggs before spring begins. Langshan pullets begin to lay nearly as early as Leghorns, which is a good quality for a breed of large fowls, and the crosses of the Langshan with mixed or common fowls also produce good early layers. All fowls should be made comfortable during the winter season; but there are breeds endowed with heavier and closer feathering than others, which are thereby enabled to retain the animal heat longer. An examination of the Leghorn hen will demonstrate that the body under the wings is sometimes nearly naked, being covered only by the wings, while the body of the Brahma and other large breeds is covered not only by the wings, but also by a heavy fluff feathering, soft and downy, which is serviceable during the winter season. There may be exceptions, but such is usually the case. Leg feathering, however, is of no advantage, as the feathers keep the legs continually damp, where the fowls are confined on heavy clay soil. The comb is another obstacle to the Leghorn and Black Spanish, such fowls having tall single combs, which are easily frosted when exposed to severe cold winds, or when they become wet, as the danger of freezing is thereby increased. The combs may be cut off close to the head, as also the wattles, if necessary, which operation is not necessarily dangerous, but sometimes beneficial when the combs are very heavy.

CULL THE FLOCK.

Each year select out and get rid of all the old fowls. January is a good month to do this, as they will bring about as much then as at any other time, and further expense in the way of care and feed is saved, also the risk of death or disease by having too many together. Always retain the early hatched pullets and last year's hens, as they will be the most profitable ones. As said before, early pullets are the birds for early winter layers, and the man who sells them for broilers at a low price, misses it. The early, molting hens are the ones that will be your winter layers next to the early pullets. If the hens begin to molt early they will get through the process before winter sets in; but if they begin to molt after cold weather comes they will not lay until spring, whether they finish before spring or not. A hen usually requires three months during which to molt. Little or no profit can be expected from fowls above the age of two years. Very valuable hen-mothers may sometimes be retained several years longer for chicken raising, but the rest should be disposed of. The most profitable fowls are pullets.



GAME FOWLS.

In January, or the fore part of February, get some purely bred cocks to mate with the hens retained, using good judgment as to the breed, if a cross is de-

sired. Too many cocks in a flock are worse than too few. The right proportion is a matter for some study, and depends, in a measure, on the capacity of the cocks. Very clumsy ones should be avoided.

INCUBATORS.

Incubators can doubtless be made useful on many farms, by giving them close study and attention. No success need be expected without that. But when the purchase of one is being contemplated, I would advise the purchase of a small or cheap one to start with, and by experimenting with that, it can be ascertained whether it is profitable or not. There are but few things that can compete with nature in producing life. Incubators may be one of them, but I doubt if they are as cheap and reliable as hens for the general farmer. To make poultry keeping a success, it has of late years become a matter of care and system, and to make full preparations for the spring trade is the order of business with the present progressive poultryman. We have our monthly work before us, and every month has its allotted share, whether it is preparing for the shows, selecting and mating the breeders, putting things in shape for hatching and caring for the broods, and so on through the whole annual routine. Spring has many drawbacks, and at the same time we are most sanguine about doing great things, our plans and prospects may fall through and burst like a bubble. Our hens which we have anxiously watched for the past few weeks, to see signs of broodiness, are deceiving us by their merry cackle. Sometimes this is provoking when we have made up our minds to have some early chicks. But there is another feature about it; every baker's dozen brings in a few dollars, and we are quieted for the time being. Some breeders will get out of patience and resolve to have an incubator which will, they say, "do away with this eternal watch-

ing and waiting for hens to sit. It can be set up at all seasons; it will regulate itself; it needs no coaxing to incubate, nor any food, only some hot water, during the time of work, and the chicks will roll out by the dozens." Now that is all very well to talk about, but you must prepare for disappointments.

HOW TO FEED FOWLS.

Feed regularly and in variety. Hide the grains in chaff or leaves, and let the fowls hunt and scratch them out. Never throw huge masses of food before them if you wish them to do well.

Leghorns and other small breeds seldom become too fat, being active and vigorous. Accustomed habitually to exercise, they work industriously and keep themselves in condition, but the large breeds, being more indolent, keep themselves rather quiet and soon become too fat. It is best, therefore, to keep this in view while feeding, for it is easy to feed too much, and though the Leghorn and other breeds are not so large, they, nevertheless, are compelled to eat large quantities in order to produce the number of eggs for which they are so famous. This does not imply that Brahmas and other large breeds must become too fat. They are easily kept within bounds by judicious feeding. Grains in excess should not be given, while bulk may be allowed in the shape of vegetables and green food

Fowls in confinement must have grass or other green food provided for them, or they will not thrive. Careless observers will be surprised to know how much grass a hen eats in a year. A small flock will keep down all vegetation in a yard of considerable size.

Instead of giving all the skimmed milk and buttermilk to the pigs, allow the hens to have a share, all by themselves, in nice clean pans, and see if they don't pay you amply for it. A little bran or meal stirred into it helps greatly. Charcoal in feed will produce a

greater amount of flesh and fat in poultry than the same quantity of feed without.

Indian corn should be fed sparingly in the summer season to fowls, as it has a tendency to fatten to excess; but if fed whole once a day in the evening, it is beneficial. Charred corn is an excellent food for laying hens, and serves to keep them healthy and vigorous. Do not feed it alone, but give once a day, and be careful in preparing it, or it will burn to ashes. Ground or cracked corn produces better results if fed in the morning, and if mixed with other food is better than if fed alone. For chicks, feed meal or soft food wet with milk during the day, and in the evening cracked corn, wheat, or some other small grain.

The last thing that the little chick does before leaving the shell is to draw into its body the white of the egg, from the yolk of which the body of the chicken has been developed. So the first food given it should not be materially different. Boiled eggs, crumbled into little bits, form the most natural food that the little chick can have. But don't be in a hurry to feed it. Full and plump as it is when it comes from the shell, it will need no feed for at least twelve hours. In that time it has learned the use of its legs, and is much more active than at first, and will readily pick up food that its wise old mother invites it to partake of.

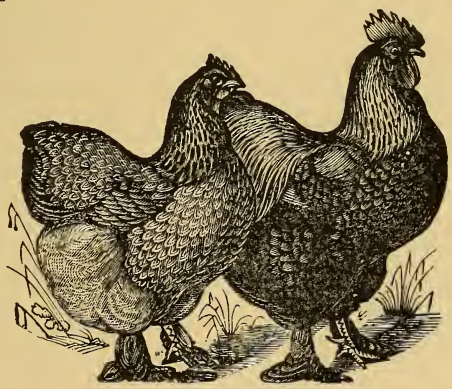
Soft food, with now and then seeds and small grain, is much better for young chicks than an exclusive diet of whole grain. Young birds, like suckling animals, cannot masticate solid food, for the organs of mastication and digestion are unable to perform the work in a healthy manner.

The great objection to soft food, such as corn meal dough, is the way in which it is usually mixed up for chicks. When it is porridgy it is not fit for them, as it sours in their crops, and causes diarrhœa. Stale

bread crumbs sopped in milk, "Johnny-cake," brown bread, boiled rice, cracked wheat, millet, and a little cooked food occasionally, will make them grow nicely.

When the chicks are able to run around and pick bugs, seeds, cracked corn, and wheat, they will make very rapid growth, for then they are able to partake of more solid food. They should have no more food at a time than what they will pick up clean, for if left to be soiled or trampled upon, it is unfit for use; and once rejected, they seldom touch it afterwards.

It is noticeable with fowls, particularly young birds, that they will pick up fresh food as often as it is dropped to them. Variety of food, or change in the manner of cooking and preparing it, makes it more relished. It costs no more, or at least not much more, to provide a variety of food than one or two kinds. Yet many breeders use but one or two kinds of grain during the year, and believe there is economy in it.



PARTRIDGE COACHIN.

In the winter season, fowls can get but little to eat except what is given to them by hand. They may be liable to pick up something in the barn-yard, where grain-fed cattle and hogs are turned every day, but a great many poultry keepers have no stalls or barn-yards for poultry to forage in, hence they are entirely dependent on their keepers for support.

The food and the manner in which it is fed has a great deal to do with the health and well being of fowls in the winter season. They like a variety of food at all seasons, especially in cold weather. When fed a variety of good food and housed well, you may expect a good supply of eggs in winter.

Feeding fowls requires judgment. In order to lay and give good results they must be given a variety of food, green food being allowed as a regular addition to the supply of grain. Meat in some shape is also essential, and good quarters and pure water are very important. As eggs bring better prices in the fall and during the winter than at any other time, the breeder will be well rewarded for the care he may bestow if the fowls are properly attended to and their wants amply supplied.

Exercise is very important for all fowls, whether old or young, and especially for laying hens, where eggs are to be used for breeding purposes, as then they are more apt to be fertile. Therefore it is desirable in winter to have the floor of the hen-house sprinkled with chaff for the fowls to scratch in, for this keeps them active and gives them the exercise they so much need.

Every hen in high health has a bright red or crimson-colored comb, and all laying hens show that color. It is most always absent from a hen that has been setting three or four weeks, as she is not in a laying condition.

Iron nails thrown into the drinking water will make a good tonic for the fowls, or else use an iron vessel in which to give them their drink. In absence of this, a tablespoonful of tincture of iron in half a gallon of water is good. The want of pure and fresh water accounts, in many instances, for diseased fowls and for the lack of eggs during the winter season.

Fowls require a constant supply of water, and without it will not lay or do well.

Good care for poultry is especially necessary during the moulting season. Feed generously, and provide shelter from inclement weather, for at this period the system is thoroughly drained, and they are liable to disease.

NESTS FOR SETTING HENS.

Many years of experience in the setting of hens and the rearing of poultry has proven that the best nest for setting purposes is the sod-box. It is made as follows: Take a square box, or make one 12 or 16 inches square and about 14 inches deep, cut out a blue grass or timothy sod just large enough to fit the bottom of the box, and about four inches thick; place the grass side down, as it is good to hold moisture; place about two inches of straw or grass on this — the finer the grass the better — dampen the nest with lukewarm water before setting the hen; then dampen every few days until the eggs are hatched. If the hen is a good setter you will get a hundred per cent. from the fertile eggs. Turkeys, geese, and all fowls in the wild state, build their nests on the ground. The sod-box makes up for the deficiency in dampness, for no doubt the proper way to make a nest for a hen for any purpose is to follow nature as closely as possible, or else let her make her own nest. Another good way to construct a nest is to saw a barrel in two in the center, then cut off two or three of the staves, so as to make a place for the hen to get in; turn the barrel upside down and make the nest on the ground. This makes a dark and damp nest, such as nature requires. Have a watchful eye on the setting hens. A hen should not be entrusted with the eggs until she has left her nest once or twice, and returned to it without too long an absence. Arrangements should be made whereby she

will not be interrupted by other fowls. Food should be within her easy reach, so that she should not be so long in quest of it. Corn is the best food for her, and green or soft food should not be given her during this period, as they induce a laxative condition. A dust-box should be provided so she can take her baths; for the hen is a cleanly creature if she has an opportunity to be so.

Fanny Field says: "A beginner wants to know how poultry raisers manage to make one hen own two broods of chicks; says she has tried it more than once, but the hen would fight all the chicks except her own. Didn't go to work right, my dear; you must mix the two families before the hen finds out how many children she has of her own, and what they look like. Slip the extra chicks under the hen before she leaves the nest, and in ninety-nine cases out of a hundred she will think she hatched them all. Or if you take the hen from the nest before she gets ready to leave, give her all the chicks when you put her in the coop. Sometimes a dark hen will object strongly to a single white chick, but if she has half a dozen of that color she will own them all."

POULTRY IN THE GARDEN AND ORCHARD.

It is a very excellent practice to place newly-hatched broods in an enclosed garden to which the older fowls do not have access. Confine the mother hen in a coop which may be placed in the shade of any small fruit tree or bush. As chicks require soft and delicate food at first, it is difficult to feed them if their coops are placed where the rest of the flock can pillage freely, but if allowed access to the garden, they will run about, doing no harm. Their little bodies and feet will make no impression on the soil; they do not scratch, never seem dissatisfied, but find pleasure only in the pursuit of food, or in basking in a warm corner

in the sun's rays. While in this stage of infantile innocence the little creatures can do the garden a vast amount of good, for their little bright eyes spy out and little bills gather myriads of insects that are not easily visible to the human eye. Perhaps owing to the very minute nature of the food they gather, arising from their characteristic voracity, they are always roaming about and doing useful work. This is a practice that should be followed when possible. I believe that if farmers and fruit raisers knew the benefit arising from such management, they would at once adopt it, for in almost all instances whenever a fruit tree is in the poultry yard, it seldom fails to bear. Knowing this to be the case, it could be made very profitable, as far as practical, to confine the poultry in the orchard. The good results are more noticeable with plums or peaches than with apples, as the fowls destroy the worms that are destructive to that fruit.

SUNFLOWER SEED.

I do not suppose that the sunflower will very soon command itself to the general farmer as a crop, however valuable it may be. But there is no doubt that as a valuable food for poultry, the seed of the sunflower is worthy of consideration. As it is so easily grown and gathered, every farmer should try to raise a large amount and store it away to feed their poultry during the winter, as it is a very valuable food, and especially as a change of feed.

POULTRY HOUSES.

Poultry cannot be kept to an advantage unless they have a properly arranged house for their accommodation. This is just as necessary to their well-being as it is that the cattle or horses should have a warm barn. Poultry houses need not be expensive, but should be built snug and warm. The three principal errors most common in the management of poultry

are: First, allowing too many fowls to mass together; second, neglecting to keep the house and yard as clean and as thoroughly disinfected as they should be; third, allowing them to roost in the peach or apple trees around the house, or in a rail-pen with a leaky roof. If you have not built a comfortable poultry house it would be well to consider the matter and see if you do not think it would pay you to build one. In the fall, before cold weather commences, look well to your poultry houses and see what is needed in the way of repairs or new buildings. To begin with, the poultry houses must not only be air-tight, but be heated by the sun or artificial heat, and can be of any design you desire. The building may be a lean-to, fronting the south or southeast, with windows in front, or made with a roof having a long slope on the south side, with an ordinary greenhouse sash to admit light. The building need not be unnecessarily expensive or ornamental, put should be convenient and comfortable. If sided up all around with jointed or battoned stock boards, and lined inside with tarred paper, it will not only make a healthful house, but one good enough for every purpose. All poultry houses should be thoroughly whitewashed every few months, and some carbolic acid put in the whitewash as a disinfectant, which will cleanse the house of all parasites and vermin. Proper means should be taken to ventilate the house, but the ventilation should be so constructed that the draught will not strike the fowls, as it is liable to cause disease and freeze their combs. Do not complain because your hens lay no eggs, if you have allowed them to have their combs frozen. It will take them some time to repair the damage which your neglect has caused. You are guilty, and suffer financially. They are innocent, but must suffer physically. There is always a good demand for eggs in

winter, and the farmer should endeavor to have his hens in such condition that they will produce eggs at this time, when they are worth twice as much as they are in summer. To do this a good poultry house is necessary.

The best and most natural flooring for poultry houses, all things considered, is clean dry earth upon an earth floor. In cleaning the house, always take out part or all of the loose earth, with the manure and replace it with fresh earth.

One of the principal advantages of having a separate house for poultry is in being able to save their droppings. These should not be allowed to accumulate all winter, but should be removed at least once a week, as they are a fruitful source of disease if not removed. You will be surprised how many barrels of the best of fertilizer you will have next spring, if you thus save the droppings from twenty well fed fowls.

In the winter, if you think the hens eat their eggs, first be sure they have any to eat. Second, remove the cause, and it will soon stop the habit. It is usually acquired by several hens crowding into one nest, thus breaking the eggs. The hens soon find they are good to eat, and that the shell supplies their peculiar appetite for bone, and so are apt to continue it. It is a bad plan to throw the empty shells into the poultry yard without first crushing them fine, or mixing them with other food. Crushed oyster shells and bones will supply the hens with what they want. These should always be where the hens can get them, and it is wonderful what an amount of them they will devour. It is folly to suppose, as some do, that the few egg shells they give their poultry, ought to supply them with shell-making material for all the eggs they expect them to lay. I have seen the lime picked off of whitewashed buildings as high as the hens could jump, and

have heard the owners complain because the "vile hens" would not refrain from this practice. Give them crushed oyster shells, or at least bone material of some sort, every day or two, and it will not only increase the production of eggs, but prevent the hens from eating them. Charcoal and lime should be furnished fowls, and let them have all they will eat. Even if the fowls are not confined, but especially so if they are. Charcoal pounded up into bits of pieces about the size of a grain of corn, or a little finer, should be put where the fowls can have easy access to it, and they will soon make use of it.

GOOD AND POOR EGGS.

The difference between an egg laid by a plump, healthy hen, fed with good, fresh food daily, and an egg laid by a thin, poorly fed hen, is as great as the difference between good and poor beef. A fowl fed on garbage and weak slops, with very little grain of any kind, may lay eggs to be sure, but when these eggs are broken to be used for cakes, pies, etc., they will spread in a weak, watery way over the dish, or look like a milky white instead of having a rich, slightly yellow tinge. A rich egg retains its shape as far as possible, and yields to the beating of a knife or spoon with more resistence, and gives one the conviction that they are really beating something thicker than water or diluted milk.

A fresh egg has a clear, yellow color when held to the eye so that the sun or a bright light can fall upon it. The fingers should enclose it so that the light is excluded from passing between the fingers and the shell. Eggs which admit no light are bad. Some dealers who handle large quantities of eggs "candle" them, that is, examine them in a dark room by holding them near a candle or lamp to see if light will pass through.

HOW TO PRESERVE EGGS.

The different methods for packing and keeping eggs for future use are numerous. But a method that I always found to be successful and one that can always be relied upon, providing the eggs are fresh and the packing properly done, is to cover the bottom of a keg, cask, jar, or whatever you choose to pack in, with a layer of fine salt two inches deep; upon this place the eggs, small end down, and far enough apart so that they will not touch each other or the sides of the receptacle; then put on another two-inch layer of salt, then add another layer of eggs, and so on till the package is full. This is, on the whole, the best method for house-keepers and for those who have only a small number to pack for market. The salt can be used over and over again.

Pickled eggs won't boil. Whenever they come in contact with hot water, the shell dissolves partnership in the middle; but the following process will be found good to keep eggs:

Take a teacupful of salt, and lime the size of an egg, and pour boiling water on them. When cold drain off the liquor and put it on the eggs. If too strong, there will be a crust on the top; if so, add more water. This is for two gallons of liquor. Eggs put down in August in this way and used in April are just as fresh and make just as nice frosting as newly laid ones.

MEDICATED NEST-EGGS.

Cut a hole in one end of an egg as big as this capital O. In the other put a pin hole. Now blow out the contents and you have the empty shell. Next mix Plaster Paris and water together, to the consistency of cream; add a few drops of carbolic acid. Pour this into the shell until it is filled, and in twenty-four hours it will be dry and you will have a medi-

cated nest-egg. Five cents worth of Plaster Paris will make a dozen, and the same amount of carbolic acid is sufficient to scent a hundred. The scheme, though novel, has the merit of being practical. It is well known that carbolic acid is an insecticide, as well as a powerful disinfectant.

WEIGHT OF EGGS.

Shall eggs be sold by the number or by the pound, is a momentous question that is agitating a great many of the consumers of eggs. It has been learned that the average weight of twenty eggs laid by fowls of different breeds is two and one-eighth pounds. The breeds that lay the largest eggs, averaging seven to the pound, are Black Spanish, Houdans, La Fleches, and Creve-Coeurs. Eggs of medium size and weight, averaging eight or nine to the pound, are laid by Leghorns, Cochins, Brahmas, Polands, Dorkings, Games, and Sultans. Hamburgs lay about ten eggs to the pound. Thus there is a difference of three eggs in one pound weight. Hence it is claimed that in justice to the consumers, eggs should be sold by weight, and no doubt, it would be found better, both for the producer and consumer of eggs, to sell by weight rather than number, for as the market is to-day, small eggs sell for the same as nice, large ones.

VERMIN—LICE.

We all know what a dust bath is, for we have seen the fowls, hundreds of times, at work dusting themselves. A heap of ashes, pile of dirt, or a place scooped out in the ground, any convenient spot that affords a good opportunity for fowls to throw the dust over themselves, is suitable as a place for a dust bath.

They dust themselves in order to rid themselves of vermin. They can easily get rid of lice if you give them a chance, but unless they are protected against their return, the fowls cannot keep themselves rid of

them. The dust bath drives away the lice, but only for the time being. If the quarters are filthy, they will soon swarm with lice; and as soon as evening comes, and the birds return to roost, the lice attack them again. There are two kinds of lice that trouble them. One kind remains on the body until driven off by the dust bath, but the other kind loves darkness rather than light, because its deeds are evil, and so it attacks them when on the roost, like the Chinch or Bed-bug, and sneakingly hides away on the approach of day. They inflict terrible suffering on the fowls, and there can be no thrift or enjoyment of health in the presence of these detestable parasites. To be rid of them is to put the quarters in a clean condition, and there is nothing equal to a thick daubing of whitewash with some carbolic acid added. It will not do to give the quarters one cleaning and then stop, but it must be repeated often.

Coal oil or coal tar is also frequently used to good advantage for the same purpose. Apply it with a brush into every crack and crevice where there is any chance for vermin, and it will rid the premises of them.

There is no use in cleaning the poultry house unless the old nests are removed and burned. They will be sure to harbor more of the various kinds of poultry parasites than any one can ever exterminate with a whitewash brush.

Lice are a great pest to poultry, as well as to any other stock, and it is impossible for them to do well with this annoying pest sucking the life-blood away from them all the time. If you notice a fowl drooping, or standing off by itself all drawn up in a bunch, watch it closely. If you can see no indications of cholera, if it eats when food is thrown toward it, but quickly resumes its uncouth position, examine it carefully to see if it is not infested with vermin. Several

kinds of lice give trouble in the poultry house, but those very small ones, scarcely discernible to the naked eye, are the worst. Examine carefully under the wings, and in the fluff of the bird. If you find them you may not be able to get rid of them without doctoring the whole flock, and renovating the premises they occupy.

Treatment: Apply lightly on the head and around under the wings, coal oil and lard equal parts, mixed. This will soon rid the fowls of them, but will be of little use unless the roosts and nests are thoroughly cleaned. All poultry houses should be looked after three or four times a year, or oftener, if necessary; by so doing it will go a long ways towards insuring health and prosperity among your fowls.

DUCKS.

We are occasionally led into wondering why more ducks are not bred and marketed among our poultry breeders in America. We have now in this country three or four varieties of imported ducks, at the head of which the Pekins stand to-day without question for size, early maturity, hardiness and thrift. The Aylesbury (pure white, like the Pekin), the Rouen (brown or parti-colored), and the Cayuga (black), are notable and of good quality. Each of these varities, within my knowledge, has been successfully bred upon a country place where there was neither pond nor rivulet for their amusement.

The ducklings were hatched under hens, and the ducks were raised with the other poultry and fowls on the estate, with similar feed and care, the owner claiming that, for marketing purposes, ducks can be reared, like other fowls, upon dry land without any perceptible difference in their thrift during the season. The Cayuga duck has not been extensively propagated until of late years, although it is well worthy of cultiva-

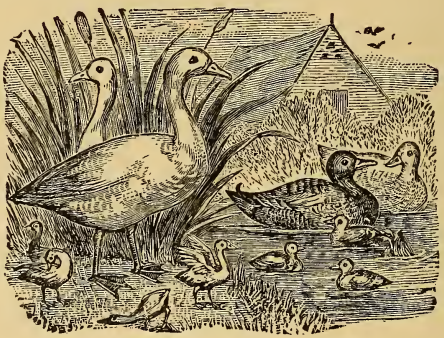
tion and the best of dark ducks. Ducks should be allowed as much freedom as possible, as they are not partial to confinement, like chickens. When they are kept in the poultry yard with hens they become qarrelsome and do more damage than they are worth, and for that reason should be kept separate or allowed to run free.

There is money in ducks, and a goodly quantity of it, too, provided you know how to get it out and have the facilities for breeding them successfully. The one thing essential is plenty of running water; a small stream or pond near by is most excellent, and far better than a river or large stream, in which latter the young ducks are apt to fall an easy prey to snakes, turtles, etc. Artificial ponds can be constructed, though these are often objectionable on account of their liability to become stagnant. If this can be avoided, by some way insuring its being kept fresh and pure, it is as good, to all intents and purposes, as a stream.

In breeding ducks, keep them in the yards until about ten o'clock in the morning, by which time they will have laid their eggs; after that they can be given their liberty. Keep the ducks laying all through the breeding season, and set all the duck eggs under hens. As soon as the young ducklings appear, transfer them to a commodious coop with their foster-mother, and make a small pen for them. Keep a shallow pan or small trough in the pen, and keep constantly supplied with clean, fresh water until they get well grown and fully feathered; do not let them fre quent the pond or stream, but give them plenty of room to run around on the grass when the due is off. When they get fully feathered let them out into swimming water and they will be happy.

It is surprising what a large flock of young ducks can in this way be reared from a single trio of ducks in a good season, as ducks get most of their living off the grass. Breeding ducks cannot be confined in pens, for they copulate in the water, and unless they have swimming water their eggs will generally be unfertile.

Any little, low, shed-like house with a good roof will do for ducks, and the only thing necessary to keep them properly is to keep the place clean and well supplied with fine hay as a bedding.



RAISING GEESE.

The old gray goose and its mate of the white or mottled variety, so commonly seen about the barnyards in certain localities, are bred in considerable numbers by farmers and poulterers in some localities where they have the conveniences and facilities for rearing this fine water-fowl, but the Embden or Toulouse geese are better.

Three or four geese only should be mated to one gander, and generally two are sufficient. Laying begins in April, or early in May. After the goose has laid her litter, from ten to fifteen, she will arrange her nest in setting order and line it with feathers. If the eggs have been taken from her they should now be returned, and allow her to cover them. As the process of incubation is of considerable length—from twenty-eight to thirty-two days she must be encouraged to leave

the nest often for food and exercise. A supply of clean water and vegetable food, raw and cooked, and also corn should be given to keep her in a healthy state. An occasional visit to a pond of water can do no harm, provided it is not prolonged until the eggs become chilled.

OUR NATIONAL TURKEY.

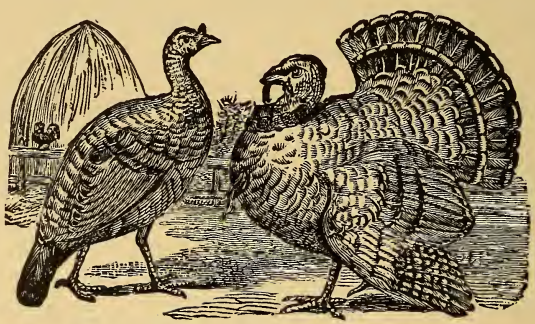
"Our National bird is not so much the eagle which few of us ever see, except at the Zoo, or rarer still, on the gold pieces," remarks a writer "but the more savory, the more festive turkey." The turkey may not soar so high in a patriotic sense, but he touches the National heart more tenderly, especially about Thanksgiving or Christmas time, when men are so susceptible to the tenderest influences of life.

Some writers assert that turkeys were known to the ancients, but a writer in the New York Era tells us this is an error. It is a nice question, too, who first introduced the turkey into France. In many parts of France jesuite is a familiar name for turkey. The very name in the French language would seem to attest its American origin, for this country was formerly designated Indes Occidentals—hence dindon. Besides this is the only country where the turkey is found wild.

A turkey in prime condition, properly cooked, is a dish of which few persons refuse to partake. The young hen turkey, plump and fat, is usually preferred; though a young Tom being larger, and weighing from fifteen to twenty pounds, can hardly be surpassed when well roasted. The old turkey is best for boning, and is excellent when boiled. Wild turkeys are always to be found in some markets during the winter season. Their flesh is darker than the tame, and has a gamey taste. A Capon turkey, however, is the most delicious of all, being more tender, succulent and finer flavored.

Well fattened and well-dressed turkeys will bring two or three cents a pound more than the lean bird. It will not only be better for the purse, but for your manhood, to send nothing but finished products to the market.

Those who have turkeys should feed liberally from early fall to Thanksgiving or Christmas. The demand for good turkey dinners is increasing, and turkey fattening should progress rapidly for early sales. In mild, early autumn weather these birds lay on fat rapidly with good feeding. At first they need to be fed only at night; they should go to their roosts every night with full crops. This will not prevent their morning excursions. Turkeys prefer corn to any other food. The addition of mashed boiled potatoes will help their relish for it. As insects drop off, flesh and scraps should be increased. For the last six weeks of their life they should be plied with corn.



BRONZE TURKEYS.

The Bronze is the king of turkeys. In short, they are noted for their great size and rich, changeable bronze colors. They are always beautiful; are pretty good foragers, and it costs little to raise them where grasshoppers and insects are plenty. They are No. 1 layers, hardy, and easy to raise; they make a very rapid growth, and if the winter is not too hard, and does not set in too early, young gobblers will weigh

twenty-five pounds at about six months of age, and hens about thirteen or fourteen pounds. Turkeys, unlike chickens, grow all winter, and make weight for the food they consume. The bronze do not fully get their weight until they are about three years old. At maturity, hens weigh from fifteen to twenty pounds, and gobblers from thirty to forty pounds each.

In most sections turkeys are very profitable, and no doubt their weight can be made from about the same feed and trouble that is given to the rearing of small common turkeys. It pays to keep the best blooded stock, as we get much larger returns from our outlay. We give it as a fact, which many persons do not understand, that turkeys shrink considerably when shipped to market, as being nervous they eat little, and the journey worries them, but they soon recover. Customers are apt to weigh them upon receipt, and many a seller gets abused for sending lighter weights than he represented, when it was owing to the shrinkage of the birds. They should not be weighed under three or four weeks of good keeping after their arrival on a new place. Shrinking happens the same with other fowls, too.

DISEASED POULTRY — THEIR SYMPTOMS AND TREATMENT.

All kinds of poultry, especially chickens and turkeys, are subject to diseases similar to those of the hog, (known as cholera and roup,) and they are as infectious or contagious with them as with hogs. This view of the matter suggests the propriety of adopting such measures with the first cases in a locality as shall prevent the spreading of the disease in any way. The diseased, in any case, should be kept apart from the healthy ones until they have well recovered, and upon the appearance of the disease should be cared for immediately. Fowls show signs of sickness immediately after they are attacked. Perfect health with poultry

is best shown by the bright scarlet color of the comb, their cheerfulness and elasticity of step. As soon as the fowl feels unwell the comb changes color, at first pale and then purple, and they refuse to eat or leave the roost, often remaining there until death.

HOW TO TELL A SICK FOWL.

The comb and wattles are the parts of a fowl to examine first in case of sickness, as they should always be of a bright scarlet color. When the comb looks white, pale, or black, something is wrong; even lice will cause the comb to change color to a certain extent. A refusal of food (for no healthy fowl will refuse to eat if fed on a variety of food unless already full), is a sure indication of disease. Thirst, to a great degree, is another sign; and a nervous, uneasy look is also a warning. A sick fowl often drinks to excess, especially when attacked with cholera; but again at other times it refuses both food and drink. Sometimes a hen will go moping about with drooping wings with no other signs of sickness than that of the comb. Whenever the comb does not show a bright scarlet, and the fowl is not lively, it should be examined and treated immediately. Delay is dangerous with fowls, and sickness among them is hard to eradicate if not driven off early. A fowl may suffer from a want of certain food which it cannot get in confinement, and unless gratified will show signs of sickness. For this reason, often change of food will effect a cure.

CHOLERA.

This name is given to a disorder of obscure origin and character, which has proved itself to be one of the most rapidly destructive known to poultry keepers. It was by far the most common in the South and West, where also it was most fatal, but it has often appeared in the Eastern and Middle States, and is now becoming very common. The causes of the disease do not

need to be detailed here at any great length. Anything that tends to lower the constitutional vigor of the fowl will render it liable to an accession of this disease. Unwholesome food, impure and stagnant water as a drink, exposure to the weather or to the depressing heat of the sun without shade, all of these causes increase the liability of the fowl to this disease, as well as to many others. The young and more restless birds are first attacked, although no age is exempt. And very large and highfed fowls soon fall victims. On damp and clay soil the disease is more prevalent than on sandy or gravel soil.

Among the causes most prominent in fostering the disease is, an over-crowded condition of the coops, and allowing them to become very filthy. In the first place, such a condition of things is directly depressing to the fowls. In the second place, the bad air makes good soil for the development of poisonous "germs." Cholera has been known, however, to attack flocks that are not kept in houses at all. Such cases can be explained by the fact that fowls thus kept are generally badly protected from the weather. Cholera seems to be most prevalent in very hot and in very dry seasons. It is infectious, but the infection does not seem to travel far. Fowls roosting near others sick with cholera catch it, but whether from them or their droppings does not appear. Scientists say "it is only infectious or contagious through the discharges, or by eating portions of those that have died with the disease, or by eating flies, worms, or other insests that contain the blood of the diseased ones."

Observers of eminence are of the opinion that it depends on a special poison, which comes into the fowl from without; that this special poison first affects the blood, and that the deteriorated blood produces the changes in the liver, and so forth, which constitute the

disease. It is called cholera, because, as in the Asiatic cholera of the human race, it is accompanied by much diarrhœa, is very fatal, and attacks many individuals at a time, but yet it is altogether a different disease. The name cholera, to which we have become well accustomed, is probably as good as any that can be devised. The organ most changed is the liver. This is found enlarged, dark green, full of dark blood, congested and usually very tender; it can be very easily crushed in the hand. The gizzard is soft, and sometimes much smaller than it should be, and contains half digested food. The crop and intestines are often full of sour, fermenting food, and ulcerated. The condition of the liver is the main thing to be noted. Of course, you will find the brain, nerves and lungs more or less congested, full of darker blood than usual, and the heart, perhaps, enlarged. The liver is not only the organ the most changed, but seems to be the first attacked. It comes suddenly; in some cases a fowl well to-day may be dead to-morrow, and a whole flock may be thus rapidly carried off.

The discharges at first are yellowish green, or like sulphur and water, becoming thinner, greener, and more frothy as the disease goes on. The breathing becomes heavy and fast, the crop fills with mucus and wind, the food is not digested, the eyes close, and in a few hours the fowl dies. There is weakness, sometimes extreme; the fowl may be unable to stand well, and have a general sleepy, moping appearance. There is much fever, great thirst, and a rapid, weak pulse.

Treatment: Use my Cholera Remedy as directed, twice a day in soft food, and separate the sick from the well ones, and thoroughly renovate, as far as practicable, the roosting places, by removing all the manure and hauling it away, and whitewashing the roosts and houses, and sprinkling the floor with copperas water,

carbolic acid, or lime. I will not say this treatment will save all those that are attacked, which it often does, but I will say it will do more than any other treatment that has ever come under my observation.

ROUP.

During damp weather the roup sometimes makes its appearance, even when the fowls have received the best care that can be bestowed. There are many forms of roup, and it becomes contagious in flocks when allowed its way unchecked; but the mild form is usually a cold, the symptoms being a stoppage of the nostrils, which gives the well known hoarse breathing, with the mouth opened. It sometimes appears also as a disease of the throat, and other times the eyes and head are affected, in all cases attended by general debility, loss of appetite and depressed spirits. The most essential object should be to separate the sick fowls from the others and remove them to a dry, warm location, feeding on soft, nutritious food. Then use the medicine as directed for cholera, which will give relief, or the treatment as given for Gapes is excellent.

GAPES.

This disease with poultry only occurs with the young, and is caused by a worm in the wind-pipe, and can only be cured by the inhaling of medicine or by the removal of the worm by hand. Some of the best methods I have ever seen to remove this trouble are as follows, either of which is very effective: First, take —

One teaspoonful of corbolic acid,
One of powdered asafœtia, and
One tablespoonful of castor oil.

Put this in a quart of soft food (except corn meal) and feed twice a day; use some carbolic acid about the drinking vessels, and keep the chicks inclosed until the dew is off the grass. Second, put fine air-slacked

lime in a barrel, then put the chickens in, cover it up, and shake it around so they will inhale the lime dust. Third, take a horse hair, make it double, insert it in the wind-pipe and twist it around a few times to catch the worm and by this means remove it. Either of these methods are good if practiced with care.

SCURVEY LEGS.

This disease is somewhat similar to the mange on hogs, and is caused very often by filthy poultry houses and yards. Treatment: Take coal oil and lard, equal parts; to one-half pint of this mixture add one tablespoonful of carbolic acid, and give the legs a thorough application of it. Once will be sufficient to cure an ordinary case. Leg weakness is something that young fowls are frequently subject to, especially the larger breeds. To prevent this, feed plenty of bone dust or ground oyster shells and oats.

Indigestion and Giddiness: Caused by eating too much corn or too highly seasoned food. Symptoms, loss of apetite, seem dull and stupid, often running wildly about. Treatment: Feed sparingly with light food, and use the cholera remedy as directed, or use the remedy as given for gapes.

AMERICAN SHEEP.

A TREATISE ON

SHEEP HUSBANDRY.

ITS PROFITABLENESS, WITH PRACTICAL INFORMATION AS TO BREEDING, AND HANDLING, ALSO THE ORIGIN AND CHARACTERISTICS OF THE VARIOUS BREEDS, WITH SUGGESTIONS AS TO FEED AND CARE.

CHAPTER XV.

TREATISE ON SHEEP HUSBANDRY.

SHEEP HUSBANDRY—WHY WOOL GROWERS DO NOT FAIL—INFORMATION AS TO BREEDING—REARING AND HANDLING—ORIGIN AND CHARACTERISTICS OF THE DIFFERENT BREEDS—SUGGESTIONS AS TO FEEDING AND CARE.

SHEEP HUSBANDRY.

SHEEP husbandry in the United States is becoming one of the great pursuits of this country. In former years the entire interest in raising sheep was for the wool clip, but of late years the production of mutton has been given some attention, and is annually increasing. The Americans give more attention to the production of wool than mutton, while in England the reverse is the case. This is only a natural result of the conditions of the markets and surroundings. England is the best mutton market in the world, while wool commands the best prices in the United States. That these conditions will change is not a matter of very much doubt, especially in the East, and near large cities, where there is a demand for mutton, and especially lambs, but still the time has not come yet, when mutton sheep are as profitable in this country as in England. The American demand now seems to be for a sheep which grows the finest fleece on a medium carcass, producing both wool and mutton. Wool must be, for some time to come, of at least equal importance with mutton; and in many portions of the country, from necessity, especially in

the far west, away from the meat raising markets, the wool must be the main object.

With this business, as with any other, the question is often asked, Does sheep raising pay? Judging from the reports as given from all parts of the country one year with another, it is very doubtful if the breeding and raising of any other stock pays any better for the capital invested than that of raising sheep. Mutton, it is claimed, by the aid of a good fleece, should be raised cheaper on the high-priced lands of the Eastern States than beef on the cheap lands of the far West. While in the far West, where sheep are raised on a larger scale upon the cheap lands, it is claimed they pay one hundred per cent. upon the capital invested. If these claims are true, and no doubt they are, sheep husbandry is without question profitable.

WHY WOOL GROWERS DO NOT FAIL.

Another question which is often asked, is why wool growers do not fail, as other business men do; and is answered by a wool grower: "Simply because the growth of wool and increase is as perpetual as the times in which they live. It matters not how dark the night is, the wool continues to grow; and it matters not how the wind blows, or how it may storm, gestation is never longer than one hundred and fifty days. The lambs will average one-half females, and often twins, and they breed the next year, making 'double compound,' a perpetual growth and no loss. Everything that does not go into market goes to enrich pastures. Though the landlord may be sick, it does not stop the growth of the wool and lambs." Not so with other business. The merchant, mechanic, or the man who works for a salary, has nothing to grow while he sleeps. When his labor ceases his income stops, and his expenses are perpetual.

It is true there are perpetual expenses attending the sheep business, but under the most unfavorable circumstances, where they can live on the cheap grass lands without feeding, the meat of the wethers will pay all expenses without drawing on the wool or increase of the ewes. Hence it is like a perpetual stream flowing into a basin. It is only a question of time about filling it to overflowing. The great drawback seems to be that men do not relish living away from thickly populated settlements and towns, depriving themselves of society for the sake of making money. This objection can be obviated in all new countries. There are villages constantly springing up near which good sheep farms can be had, where the owner can visit his flock daily and also give his family the benefit of schools and society. There are many such now on the plains and one is reminded of the patriarchal days, for there is no lack of society among the shepherds and in the family, and the long summer days and evenings are pleasant. In short, the way to success and happiness is to build up an independent civilization. To a man of energy and some means, such a life is pleasant and attractive. It is hard to answer the common inquiry as to what the profits of the business are. As much depends upon the individual care and management, as in any other business; but I am safe in saying one hundred per cent. per annum net profit is realized by wool-growers who make a permanent business of it. Many intelligent wool-growers are of the opinion that should wool yield only twenty cents per pound they would have a more pleasant, certain and remunerative business than any other branch of agriculture in these United States.

Taking the judgment of those who follow the business, there is no doubt but that sheep husbandry, judiciously and scientifically followed, is one of the

best paying pursuits of the American people, and especially with the western shepherd, who follows it on an extensive scale, or with the general farmer who is engaged in mixed husbandry.

Sheep are especially suited to the small farmer, and to the farmer of limited means, on account of the small amount of capital and limited range necessary to provide for a small flock. As it is a well known fact that, with the keeping of sheep, the land does not deteriorate, but its fertility is constantly increased. So that on lands which have been used as sheep walks, when a crop of any kind of grain is desired, a marked increase is invariably noticed, as sheep distribute their droppings more evenly than cattle, and on the highest ground, where they are most needed.

Again, sheep are closer feeders than any other farm stock and great foragers, consuming a greater variety of food than any other stock; thus often proving beneficial as well as profitable in reclaiming an old farm, or one which is covered over with briars, and it will pay well to purchase a flock of sheep to aid in subduing them.

A comparison was made by Linnæus, the naturalist, as to what kind of stock ate the greatest variety of forage. He found: The horse ate 274 species of ordinary forage plants, and rejected 212; cattle ate 276, and rejected 218; while sheep ate 387 species, and refused but 141.

The value of the different foods for sheep is a matter of no small amount, and one on which the success of the flocks depends more than on any other in the far West or elsewhere, when kept in large numbers. In the present state of the flock industry every experiment looking toward the cheapness of foods should be eagerly welcomed, and no doubt the fodder, sorghum, root, alfalfa, and millet crops will play an important

part in furnishing this cheap food. Two sheep can be raised where one is raised now, if judiciously cared for, and shepherds would do well to try, on a small scale at least, the crops mentioned. Good corn fodder is an excellent sheep food. It is loosening, cooling, and relieves constipation, and early made, properly cured and stored hay, either clover, timothy, or millet, is far superior to matured hay for sheep.

It has been proven by actual experiment that beets or turnips can be raised, lifted, and stored for six cents per bushel. At this cost they certainly are a profitable food for sheep, and any one who has not tried raising and feeding them to sheep, cannot have a full appreciation of the benefit derived from this cheap food, and in the increased thrift of their stock. There can be no doubt of the advantage of the English method of feeding compared with ours, if we compare their immense fat muttons with ours; and in all the feeding districts of the English provinces, beets and turnips are fed in immense quantities. But in attempting to cheapen the cost of rearing the flock, the wool and the carcass should not be forgotten, but let them be steadily improved each year. Sheep breeding and wool growing are arts which allow of no half-way measures; but the whole attention of the breeder must be given to the management and care of his flock, if he expects the highest success.

INFORMATION AS TO BREEDING.

In breeding sheep, as with other stock, every one should be governed somewhat by the situation. The eastern farmer, or those living near large cities, where they have the advantage of a good meat market, can no doubt make the production of mutton more profitable than that of wool, or the farmer who keeps a few sheep can give them better attention than where large flocks are kept; and perhaps those farmers who cannot

well keep large numbers could handle the mutton breeds to better advantage. They require just such treatment as these farmers are best prepared to give them.

Information from different sections goes to show that the consumption of mutton has increased greatly of late years. Is not this due, in a great extent, to the improved quality of the mutton? If so, cannot the demand be much further stimulated by feeding the people on better mutton still?

As said before, the English sheep breeders pay more attention to mutton than wool. If we, in this country, would follow their example, we would hear no more clamoring about the tariff on wool. It is bad enough to fear Australia, with thousands of miles between her shores and ours, but the difficulty lies in our failure to realize all that is possible from the sheep industry, and our failure to breed a better mutton sheep and to select and grade up the quality. The Oxfords, Shropshires, Hampshires and Southdowns are becoming numerous, and are as far superior to the scrubs as an electric light is to a tallow candle. Not only do they possess size, but certain characteristics that improve the quality of the carcass and enable the breeder to secure a higher price for excellence, as well as a greater profit for weight.

It is not altogether the weight that breeders must consider, though weight is a very desirable matter. We wish, in our markets, better mutton, of a juicy, marbled, attractive quality, that commands a sale as soon as it arrives, and which will always be in demand. Such mutton is as easily produced as that which is inferior, and we are safe in guaranteeing a heavier fleece also. The lambs from the improved breeds, or grades, are also more saleable than those from natives, to say nothing of their rapid growth and heavy weight at

an early age. I have alluded to this subject for the purpose of advising the farmers to endeavor to raise better mutton, for by so doing they can laugh to scorn the tariff, and derive a larger revenue in a single season from mutton than they can from wool in twice that length of time. For lambs properly bred and raised, now bring as much in the early market as sheep one and two years old.

THE COUPLING SEASON.

Where the highest type of perfection of offspring is desired, the condition surrounding their begettal needs to be looked after as carefully as those necessary to their proper and rapid development after birth. As a rule it is not good policy to allow rams to run with the flock during the coupling season. When so allowed, all control over the crosses is surrendered. The heavier and more pugnacious rams soon become masters of the situation, though not without much injury to themselves, as well as their weaker antagonists. Rams that have quietly lived together all the previous season will be found no exception to this rule when turned with a flock of ewes during the rutting time. Add to this the further fact that much vigor is expended by repeated service to the same ewe, but little experience is required to predict an offspring lacking in some of the characteristics of lambs begotten under more favorable conditions. When but one ram is to be used, and the service required of him quite limited, say not more than twenty-five ewes, the lazy man's policy of "turning in" may find some excuse; but then only with the understanding that he is separated from the flock during the night, that both ewes and ram may have the rest requisite to a proper discharge of their reproductive functions. We are aware that a different course is generally pursued, the exception being found among those breeding high-priced animals, but are satisfie

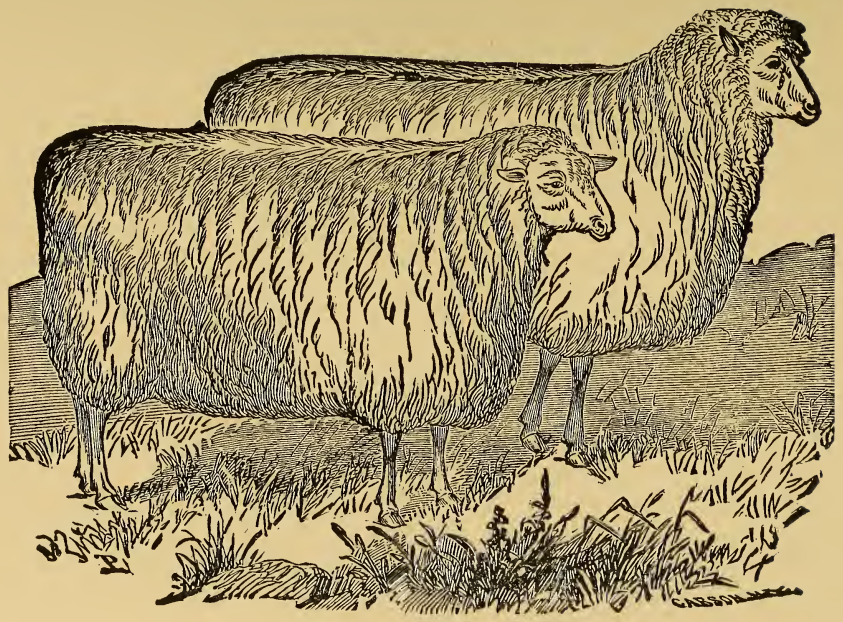
that it is so pursued at a loss to flock-masters in delaying the building up of a thrifty and profitable flock.

SELECTING A RAM.

A sheep-grower gives the following points in selecting a ram: "Every discreet shepherd who is about to purchase a ram seeks three desiderata: First, the maxium of wool with the minimum of yolk. Second, the greatest amount of muscle done up in the least wrapping of skin. Third, an animal that will reproduce himself the great amount of times, i. e., constitution, wool, mutton. In a humid climate one dare not concede a single point in constitution. Unless the flock-master has personal knowledge of the animal's exceptional vigor, he should demand good barrel, ribs well sprung out, eyes large and prominent, and square rump, body coupled up rather short, ears thick and soft, and they and the face covered with fine, white, silky hair. But in the skin resides the surest test. I have known a ram to have nearly all the above points and yet be delicate; but I never knew one having a bright rosy skin to be lacking in robustness."

THE EWES.

The ewes should be bred so as to have the lambs come as early in the season as possible, so they can be saved; better lose two in the spring than one in the fall. As the ewes near parturition they should be well fed, with an occasional feed of laxative food, roots, or oil meal and bran. They should be provided with shelter during lambing time, and so arranged that they can be kept warm at cold times. In case they have any difficulty in lambing they should not be assisted for at least a few hours, but let nature alone. When any assistance is given, let it be with caution and gentleness, In case of any trouble or sickness, refer to the veterinary department of this work for instructions.



GRADE COTSWOLD LAMBS.

After lambing a ewe should not move about much. If she is weak, give her some good whisky or whisky gruel. If her teats are closed against the efforts of the lamb, try and squeeze them out with the wetted fingers; or in case they have grown shut, open them with a knitting needle, being careful not to insert the needle too far. If they are inflamed, bathe with some cooling lotion, and hold her while the lamb nurses. If she disowns the lamb, or is wanted to adopt another, shut her up with her lamb away from the other sheep, and hold her while it nurses. Bathe her nose and the lamb's with whisky, which will sometimes bring her to terms.

THE LAMBS.

New born lambs that can help themselves should not be interfered with. If so weak they cannot stand, they should be held up to nurse, and in case the ewe has no milk, use a nursing bottle with a gum nipple; these are now sold by dealers, and should be kept in readiness for use. The milk of the cow, fresh and warm, is just right for the lamb. It should be given often, but too much should not be given at a time. If the lamb be chilled by the cold, it should be taken in the house to the fire and cared for, by warming and feeding it. When quite weak give it milk and a little whisky, which will soon restore it.

In castrating lambs, there are two methods used. I have seen both performed with good success. Neither one is difficult, and can be done by any farmer. The first is to cut off the lower end of the scrotum, press the testicles upward and make an incision in the inner skin and thus remove them, the same as is done with a pig. The other plan is, after removing the end of the scrotum as usual, seize the testicles with a pair of pincers, and remove them by a quick jerk, without cutting the inner skin. This is thought by some to be

the best method that can be used, but it is more severe.

WEANING LAMBS.

They should be weaned at four months of age, and put on a good piece of fresh grass. In absence of this, or when a rapid growth is desired, they should be fed on green fodder, roots, or grain, so as to keep them growing fast until matured. This is the great secret of raising sheep or other stock—early maturity. As cold weather approaches, they should be sheltered and well cared for.

THE MUTTON BREEDS.

The improved mutton breeds which have found most favor in the United States, are of the long or middle wool. Of the former, the Leicesters, Cotswolds, and New Oxfordshires; of the latter the Southdowns, Hampshires, and Shropshires. The Leicester sheep are unexcelled in earliness of maturity, and none make better returns for the amount of food consumed than they do, but they require better shelter and care than any other variety. The ewes are neither so prolific, nor so good nurses, as those of other mutton families, and the lambs are delicate and hard to raise. The mutton is only medium in quality, owing to the great amount of fat. The fleeces are composed of a long combing wool, and average with select flocks, about ten pounds each.

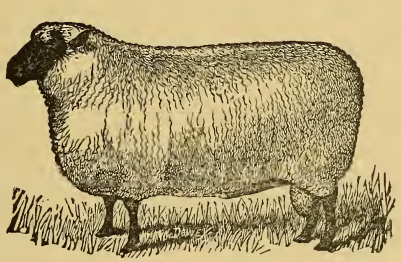
THE COTSWOLDS.

The Cotswolds are a larger, harder and more prolific sheep than the Leicester, and the ewes are better mothers; their wool is valuable for combing use, but the fleece is no heavier than that of the Leicester, but their mutton is far superior, as it is not so fat, and the fat is better intermixed with the lean meat. They are much used in crossing other breeds and varieties, and are decidedly the favorite long wool sheep of America.

The Lincolns are as large as the Cotswolds, though in other respects, as now bred, very strongly resemble the Leicester; but the fleece is longer and heavier, and unsurpassed in luster, commanding, therefore, among the best prices in the market.

THE SOUTHDOWNS.

The Southdowns are the oldest established short-wooled, improved mutton variety. In size they rank with the Cotswold, but have a lighter fleece. Their mutton is very choice, and commands a better price than that of any other breed. They are hardy, good feeders, and excellent nurses.



THE HAMPSHIRE-DOWNS.

This family is the result of a cross between the Southdowns and a long-wooled English variety of greater size and better constitution. They are coarser than the Southdowns, but possess nearly all the good qualities of that breed and are hardier, and the mutton commands a good price. The Shropshire was also produced by a cross of the Southdowns with a hardy, short-wooled stock; and some have a dip of the Leicester and Cotswold blood. They are large, and unite to an uncommon degree the good qualities of the short and long wools. Their mutton is of good quality, and the ewes prolific and good mothers. The Oxford-downs are a comparatively new family, and are a cross between the Hampshires, Southdowns or Shropshires, and their characteristics are about the same as the

Shopshires, though they vary some in their appearance and quality.

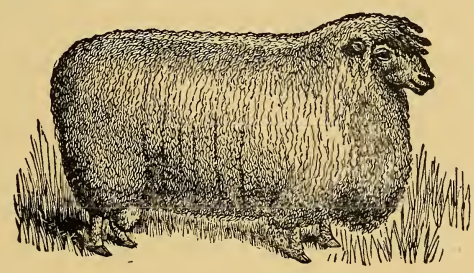
THE MERINO.

The American Merino is a descendant of the old Spanish or French Merinos, judiciously crossed and bred almost exclusively for the production of wool. They are a small, compact, hardy breed, with a very dense fleece, shearing some eight pounds per head, of a short, oily wool. The Merino is well adapted to be kept in large numbers upon the plains, or rough, poor land. They are great walkers, traveling a long ways for food, and are freer from disease than the larger mutton breeds. Almost all sheep demand for their health dry land, but with the Merino, dry land is indispensable. There may be wet land in their range, but they must not be confined to it. They will thrive on less feed than other breeds, and can travel further to obtain it. Hence they are well suited for all countries where sheep raising is done on a large scale. The ewes are very prolific, good sucklers, and the lambs hardy. The Merino, on account of its density of fleece, with which it is well protected, and its hardiness in constitution can stand more exposure than other breeds. The Merino cannot be matured under three years; and this makes it necessary that this breed must always remain a large producer of wool, and any course of breeding tending to lessen the fleece is a move in the downward direction. A noted breeder says he "believes that the continual use of smooth, long-wool rams is contrary to the correct principles of breeding, and always results disastrously, and what sheep breeders had yet to learn was that they needed density of fleece, more than length of staple." Mutton sheep, to do well, require richer soils than the Merino, and those yielding regular and good food, but they most all do better on rich upland than on low land.

MERINO BUCK AND LAMB.

What constitutes a good sheep? This is a very important question, yet perhaps no one could give an answer which would be satisfactory to all sheep-breeders. One breeder admires size and symmetry, another desires to breed a medium sheep, good for mutton, with medium fleece, while another cares nothing for the carcass as long as he can grow a fine fleece of the greatest weight. A sheep adapted to every section and to every breeder's surroundings cannot be grown in the same animal, so that a description of a breed which would be one man's ideal perhaps would be entirely unsuitable to any other man or his surroundings.

A good cross is obtained, when early maturing lambs or size is wanted, by using a Costwold buck, or a buck of either of the down breeds, with Merino, or common ewes. The fecundity and excellent nursing qualities of these ewes give them the first place in breeding for early lambs; or a common flock of sheep can be bred up to a great improvement by the use of a pure buck of the characteristics desired, and the best ewes of that cross retained and bred to another good buck of the same breed.



A COTSWOLD RAM.

The realization of profit does not always depend upon immediate results. The breeding of a common flock to a profitable basis requires some time and means; but the end should be more carefully kept in view than immediate profit. The flock should be carefully sorted each year, and nothing but the best re-

tained for breeding purposes. Sometimes large prices can be obtained by letting a breeder take the pick of the flock, but this would be worse than folly, and would ruin the prospects for years to come. The flock should be graded up to a high standard, even at considerable cost; and it should be remembered that the choice of the flock which has been bred so carefully for years is worth more to the owner than anyone else.

In breeding it is always best to give both the subject and the flock some study, and learn exactly what class of wool your flock now clips, and what kind would pay you best to raise, then breed for this type alone. This is very important in securing an even clip of wool of average quality. This, of course, cannot be done in one season. But by carefully selecting the breeding flock and using a ram of the same type of wool in a short time the flock can be bred up to such a point of excellence that their fleeces will be uniform in quality and difficult to tell one from another. Until such is the case, or as long as in sorting, a part of each fleece has to be thrown into a separate pile, or as long as a mongrel clip is raised, just so long will the wool have to be sold at a disadvantage.

SUGGESTIONS AS TO FEEDING AND CARE.

Good shelter, as well as food and water, is indispensable for sheep in the winter time. Their feed should be composed of a variety of foods, hay, corn-fodder, corn, oats, mill-feed, and roots, intermixed and given regularly. The sheep is exceedingly neat and even fastidious about its food and drink, and hence should have only the best, with grass and clear running water. Though they use less water than other animals, often passing whole days without it, yet it is none the less necessary for their comfort and health that it should be accessible. Salt regularly twice a

week, or keep rock salt where they will have free access to it, as it is essential to their health.

In growing sheep, the first requisite is an intelligent shepherd; the second, good sheep, and third, good care, including good feeding. This states in a few words all there is in sheep-growing; but those unversed in the matter would be surprised to find out just how much intelligence and skill, how much care and feed, and how much capital is invested in rearing a fine flock to produce profitable results. The spring is the time when sheep require the most careful attention, and is also the season in which, as a rule, there is the greatest mortality among them. At this season the sheep are weakened in vitality by the long winter's cold and storms, and their system is not able to withstand the climatical changes which occur at this time; and unless very carefully tended they must succumb, in their weak and debilitated state, to the inevitable. The sheep now should have an increase of grain food, and their feed be changed, and some kind given them which will tempt their appetite. The weak ones should put by themselves and receive extra care.

In turning sheep out to grass in the spring, it should be done only an hour or two during the day at first. In this way they are not so liable to scour, as the change from dry to green food is less sudden. If they do scour when turned out upon grass, feed some corn and bran, dry, which will check it.

The sheep should be prepared for the summer by being tagged in early spring, before being turned on grass, their feet trimmed, and the animals carefully watched, that maggots do not get on them and destroy them. One principal argument for early shearing is that it obviates all trouble with these dangerous pests of the flock. Nothing is more conducive to the welfare of the flock than just such management as will

always keep the sheep comfortable, thrifty and in good health. If this is done nothing more is needed to insure the highest condition and profitableness of the flock, according to its grade. It is important that the flocks be carefully sorted, and the weak sheep not allowed to run with the stronger ones. Sheep of different ages and conditions should be separated into separate flocks, and the weaker ones have a little extra food. Old sheep ought to be in a lot by themselves so as to take time to eat their feed, for, like old men and women, they require more time to eat. Feed a half bushel of grain morning and evening to fifty head; this is enough in one lot to feed right and do well.

In culling out the flocks in the spring, about as good disposal as can be made of the culls is to fatten them off on grass. They can be fattened very rapidly, as well as cheapily, on good grass, with the aid of some grain twice a day, and the local butchers will, as a rule, pay a fair price for such muttons. Dispose of all the yearling underlings. The reason for parting with yearling underlings is this: They are liable to breed disease among the flock, and nothing should be re tained unsightly to the eye of the flock-master. The more evenly sheep are graded, the more evenly will they thrive.

The day has gone by when a man's flocks are estimated and valued by their numbers. Henceforth it will be the income that each sheep will yield that will determine the value of the flock, whether it be in wool or mutton. Therefore keep none but the best, and remember that good sheep require good care to maintain their excellence, or they will soon deteriorate.

Do not undertake to keep sheep on low, undrained lands. They will surely contract disease, and a sick sheep is about as mean a thing as I know of, a sick hog not excepted. There is nothing more injurious to a

sheep than to lie on wet ground or a fermenting manure pile. Therefore keep them well bedded. They, above all other stock, must have dry and comfortable quarters.

Frequently advise is given farmers to pasture their orchards with sheep. Any one having the least practical knowledge of the nature of sheep knows that they would much rather peel a nice, thrifty young apple tree than eat the most tender grass, and that they will even peel quite large trees. Therefore, they should never have access to the orchard. A change of pasture is good for them, but remember that the orchard is not the proper place to resort to, and that medium short grass, on high or dry land, suits them best. In the fall, if the pasture fails, do not put off feeding them hay or grain too late, unless a good crop of pelts is wanted in the spring.

THINGS TO BE REMEMBERED.

First, keep sheep dry under foot with litter. This is more necessary than roofing them. Never let them stand or lie in mud or water. Second, count them every day, and if any are missing, hunt them up and see what ails them. If any sheep are hurt, catch them at once and wash the wound; and if it is fly-time, apply spirits of turpentine daily, or wash with a solution of carbolic acid. If a limb is broken, bind it with splints tightly, loosening as the limb swells, and bath with arnica to reduce the fever. Third, feed grain, if one-half of the sheep has to be sold to buy grain for the other half, but begin with the greatest care, and use small quantities at first, and gradually increase up to full feed. Fourth, separate all the sick, weak, or inferior ones from the strong and give them special care; rye and oats for weak or old sheep is an excellent feed in cold weather. Fifth, take up the lamb bucks early in the summer, and keep them con-

fined until December following, when they may be turned out. Sixth, keep a number of good bells on the sheep, as they are a protection against dogs, and, if possible, every night bring them up and put them in an enclosure for protection. Seventh, never let the sheep spoil their wool with chaff or burs. Remember that burs in the wool are removed only by machinery, and therefore reduce its value. Cut away the weeds that produce them. Eighth, if a ewe loses her lamb, milk her daily for a few days, mixing a little alum with her salt, and bathe her udder with lard and camphor, which will remove the fever. Ninth, have the lambs come as early as possible, so they can be saved. The early lambs require more attention than late ones; but when fine fat lambs are finished in time to meet the early market it is doubtful whether any other kind of stock pays better. Tenth, give the lambs a little mill-feed in time of weaning. In preparing them for market, keep in mind that the more flesh that can be put on them the better prices they will command. This is, in reality, much more important than extreme size. Eleventh, let no hogs eat with the sheep in the spring, by any means. Twelfth, never frighten sheep, if you possibly can avoid it, and kill all the dogs that bother them, your own not excepted. Thirteenth, cut tag locks in early spring, which will prevent foulness or maggots. Fourteenth, for scours, give ginger and powdered charcoal in wheat bran; prevent by taking care in changing dry for green food. Fifteenth, if one is lame, examine the foot; clean out thoroughly the hoofs, and if unsound, apply tobacco with blue vitrol boiled in a little water. Never buy lame sheep and bring them on the farm, as by this means foot rot is spread. Sixteenth, shear at once any sheep beginning to shed tis wool unless the weather is too severe, and save carefully the pelt of any that die. Seventeenth, the wool

business is not likely to be overdone in this country, as we do not now supply our demands, and the market will increase as rapidly as the supply, therefore endeavor to increase the quantity and quality of the wool by careful selection and judicions breeding. Eighteenth, the crossing of the long wools and Merinos cannot be done without sacrificing the fineness and combing qualities of the fleece. Wool is a commodity — a manufactured article, which requires the highest intelligence and skill in the production of a fine article, and therefore cannot be procured without much study and care. Nineteenth, have at least one good work on sheep, to which you can refer, as in this progressive age, no one can make the raising of stock a success without some study.

AMERICAN CATTLE.

A TREATISE ON

THE CATTLE INDUSTRY.

OF AMERICA,

CONSISTING OF A DESCRIPTION OF THE VARIOUS BREEDS, AND THERE CHARACTERISTICS WITH PRACTICAL INFORMATION AS TO BREEDING, GROWING AND FEEDING; ALSO THE MOST APPROVED MODERN METHODS OF DAIRYING.

CHAPTER XVI.

THE AMERICAN CATTLE INDUSTRY.

THE CATTLE INDUSTRY—DIFFERENT BREEDS AND THEIR CHARACTERISTICS—FAMOUS COWS AND STEERS—HOW TO SELECT BREEDERS—PRACTICAL BREEDING, GROWING, AND FEEDING SUGGESTIONS—MANAGEMENT OF BULL, COWS, AND CALVES.

THE CATTLE INDUSTRY.

THE growing of cattle in North America has become one of the great live stock industries of the world. The congeniality of the climate, as well as the soil, in most all parts of North America are such as to produce abundance of grass and feed, and thereby render the growing of cattle profitable; and the lastfew years have shown a great increase in this industry. Not only has the natural increase of population and the advance of civilization greatly increased the production of cattle, but men of immense fortunes, both in America and foreign countries, have embarked in the business of raising cattle in large numbers upon the vast plains of the West for the production of beef; and now herds of one, and even ten, thousand head are of no common occurrence. Following this great increase of the production of cattle, naturally has come the introduction of the strains of good blood, and now America is well represented with large and numerous herds of purely bred cattle of all the improved breeds; namely, the Short-horns, Herfords, Polled Angus, Galloways, Red-Polled and Devons, which represent the beef breeds; while the Holsteins, Jerseys, Guernseys

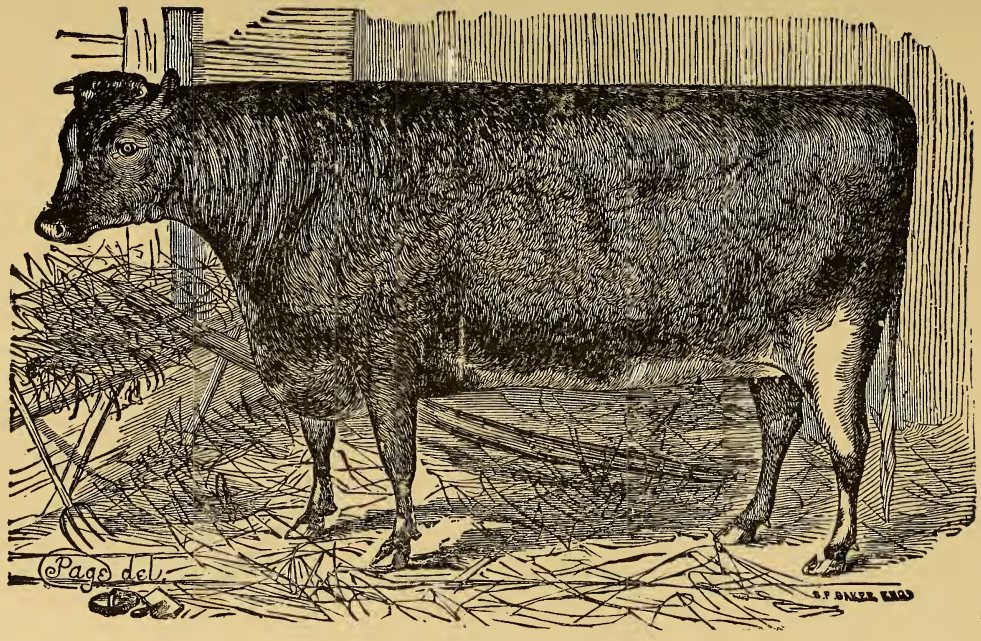
and Ayrshires represent the dairy breeds. The characteristics of all these cattle are such as to well adapt them to the wants of the American people when purely bred or crossed upon our native stock. The most of these cattle are too well known to a majority of our readers to demand any special description or comment, but I will give a brief description of each breed, as to their origin and characteristics, for the benefit of those who may not be well acquainted with them, and who may be contemplating the purchase of some of the new breeds.

SHORT-HORNS.

The short-horn is one of the oldest and best established improved breeds of cattle known. They first originated in England, and were known as the Tees-water or Durham cattle. Charles and Robert Colling were the first and most successful breeders of these most famous cattle, commencing about one hundred years ago. The bull Hubback, the founder of the breed, was purchased in 1785 by Charles Colling at a low price, and was raised by a poor man upon the highway. He was of medium size, compact form, admirable touch, and of a yellowish red color. He was so easily fattened that he soon became useless as a bull. This bull was bred to the cows owned by the Collings, and later an infusion of the Galloway blood was introduced into their herd. This progeny was inter-bred until 1810, when they had succeeded in forming a very fine breed of cattle. Messrs. Bates, Booth and other breeders of England have done a great deal to improve this fashionable breed of cattle, and in 1850 Mr. Bates sold the Dutchess family, part of which were calves, for an average price of $581, and in 1853 Lord Ducies' herd averaged $760 for sixty-two head. Since, individuals of superior excellence have been sold at fabulous prices. As now bred, the improved Short-horn is

less in height, broader, more compact and heavier than of former days. In color they vary from snow white to cherry red, though the red and white, or roans, predominate. They are easily kept, fatten readily at any age, and obtain as great a weight at any age as any other breed. They are heavier milkers than other beef breeds, and very valuable to cross into the native cattle. The public sales of Short-horns that occur nowadays bring forcibly to one's mind the fact that the day of fancy-priced Short-horns is at end. It was only a few years ago when, at the New York Mills sale, one cow realized $40,000. Another of the same herd was taken to England for Lord Bective at about $30,000. This was in 1873, but $20,000 and $35,000 respectively were paid for two heifers at Windermere eight years ago. At the Dunmore sale, in 1875, $22,500 was paid for a bull, and the same year in Toronto a Duchess heifer, less than six months old, brought $18,000. In 1876 a pair of Duchesses realized $21,000 and $23,000 respectively. In 1879, at Dunmore, two Duchesses were bought at about $15,000 apiece by Sir Henry Allsop, and their progeny came into the ring in good form at one of the recent sales, but failed to realize any of the above named fancy prices.

The prices of finely-bred Short-horns, however, are very far from what they used to be, but this does not prove any real practical decadence in the Short-horn beeeding interests. Short-horns are as good as they ever were, and the fact that the Duchesses no longer bring such fabulous prices only indicates that the excellence of the race has become more generally distributed, and that as a whole, Short-horns are now of more real practical value than they were in the olden times, and the prices that they command at public and even private sales now-days, put them within the reach of all enterprising farmers. Short-horns must have



THE SHORTHORN.

an abundance of feed and good pasturage to do well, and for this reason are best adapted to rich, level, or gently undulating lands. On hilly, broken, or poor lands that produce short grass or scant crops, some of the smaller, more hardy. active breeds of cattle will give better results.

THE HEREFORDS.

The Hereford cattle are also an English breed, and in their characteristics resemble the Short-horns very much. They are uniform in color, being a light red, with white or mottled face, breast, belly and feet. Their horns are longer than any other improved breed of cattle except the Devons; hair soft, silky and curly, showing them to be a breed of great vitality. They are fully as compact and heavy as the Short-horns, and less in height. They are noted for being quick maturers and great rustlers, and have become quite fashionable of late years in America, for improving our native cattle; and as a beef breed have now become close competitors of the Short-horns.

ABERDEEN — POLLED ANGUS.

This is another breed of cattle that has become very fashionable of late years, and has been heavily introduced into America. They are of Scotch descent; have no horns; very compactly made; about the size of the Herefords, and covered with a heavy coat of curly, black hair. As quick maturers and rustlers, they have no superiors, and should prove very valuable on the plains, as well as with the general farmer, as a beef producing breed, but as milkers, no special claim can be made for them.

THE GALLOWAYS.

Are of the same origin as the Angus, and resemble them very much, except that they are some rougher in form, more slow to mature, and have a more curly coat of hair. Hon. Wm. M'Combie, of Tillyfour,

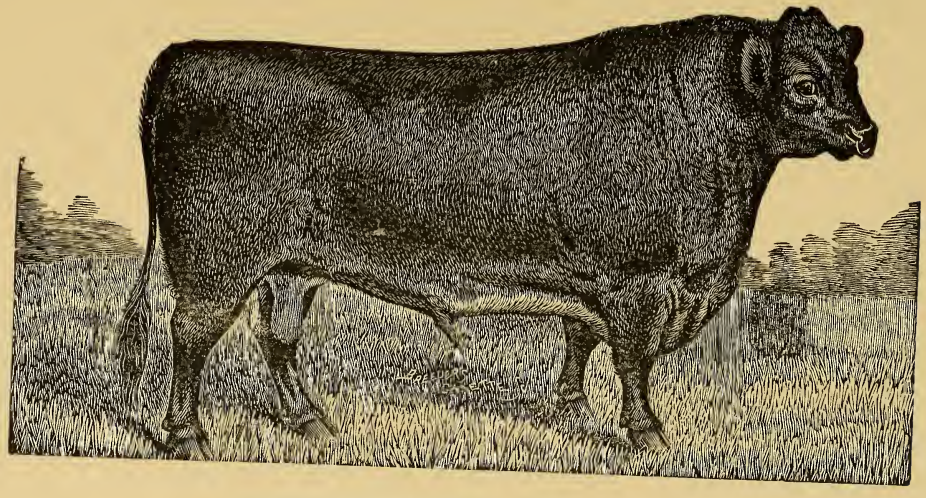
Scotland, was the chief founder of the Black Polled cattle. His name is not less inseparably linked with the fame of the polled cattle of Scotland than is that of the Collings with Short-horns, or of Tompkins with the white faces of Herefordshire.

The Red Polled cattle are also of foreign descent and resemble the Angus and Galloways very much except in color. They are said to be good handlers, quick maturers, and medium milkers. They are of good height and smooth, but not as compact as the Angus, and are covered with a smooth, red coat of hair. Any of these polled breeds are said to be very hardy, and can endure a great amount of cold and exposure, and thrive upon a more scanty fare than the Short-horns or the Herefords.

HOLSTEIN — HOLLAND, OR FRIESIAN CATTLE.

These cattle were originated in Germany, and are one of the oldest improved breeds known, but have not been introduced into America very much until of late years. They are now becoming very fashionable, and are considered the leading dairy cattle for milk, butter, and cheese. In color, they are black and white spotted, or black with a white belt around them. They are not as compact and smooth as the Short-horn, Hereford, or Angus cattle, nor as well adapted for beef, although they are as large; but far superior to them for dairy purposes, and thus prove valuable as an American breed, and especially in the dairy districts.

The Devons are an old English breed, and are well adapted to a rough, rugged country. They are a dark red, smooth, compactly made, active breed of cattle, hardy and quick to mature, good milkers, and the steers make the best of oxen. They are smaller than any of the above named breeds.



ABERDEEN – POLLED ANGUS.

ALDERNEYS — JERSEYS — GURNSEYS.

These cattle were originated on the British Channel Islands of the same names. While they vary somewhat in color from a light fawn, or squirrel, to a pale red, and also in size, yet their characteristics are about the same, as they are emphatically butter breeds. They are more noted for the quality of their milk than for the quantity, it being very rich; and the butter for its rich, golden color, hardness of texture and nutty flavor. The laws under which they are bred in their native homes, allowing no other breed of cattle on these islands, are very strict, and well enforced in order to preserve the breeds in their pure state.

The Jerseys have had quite a boom in America in the last few years, and many have been sold at large prices, their chief value being in the large amount of butter they are capable of producing. As a cow for the wealthy class in a city, or for those making butter for that class of people, they are valuable; but for the dairy, where milk is sold, or for the general farmer, who wishes to produce beef milk and butter, they are of but little use.

The Ayrshire cattle originated in Scotland, and were bred exclusively for the dairy. They are a compact breed, in size and characteristics resembling the Devons, but are heavier milkers, and of a brown, or brown and white color. They, or the Guernseys, have more size, and are better adapted to the wants of the general farmer as a dairy cow than the Alderneys or Jerseys. But as a cross upon the native cow for the general farmer's use there is probably no breed equal to the Short-horns, although some of the other breeds are highly recommended, especially the Holsteins.

NOTED COWS.

The famous Jersey cow "Mary Anne of St. Lambert's," was dropped March 26th, 1879. Mary Anne

of St. Lambert produced 36 pounds $12\frac{1}{4}$ ounces of marketable butter in seven days in the fall of 1884. The test was made in accordance with the rigid rules laid down by the American Jersey Cattle Club, and there can be no doubt as to its thorough accuracy and reliability. In the seven days covered by the test, this cow gave 245 pounds of milk, an average of 35 pounds per day; 36 pounds being the largest and $32\frac{1}{2}$ the smallest yield in any one day.

The cow was fed by the manager at his discretion, and he informs us that at the beginning of the test she was eating thirty-five imperial quarts of feed per day, consisting of the following: Twenty quarts ground oats, ten quarts pea-meal, three quarts ground oil-cake, two quarts wheat bran, and that this was increased up to about fifty quarts per day, the composition of the above food being varied. She was also fed a small quantity of roots and cabbages, and a few apples, and kept in a small pasture in company with another cow.

"Eurotus," a Jersey cow, was dropped in 1871. From the milk, given in one year from this cow, 778 pounds of butter were made.

The Holstein cow, "Mercedes," was dropped in 1878, and died in 1884. This celebrated cow ranked among the heavy milkers of the breed she represented, and from the milk she gave in thirty days, 99 pounds and $6\frac{1}{2}$ ounces of butter were made, eclipsing all competitors in that length of time for the production of butter. The well known cow, "Aegis," with a milk record in one year of 16,824 pounds, stands fifth in the list of milk records, the heaviest being 26,061 pounds and 11 ounces, as given by the Holstein cow, Clothelde. The next is 18,120 pounds, 18,005 pounds, and 17,746 pounds, respectively. The cows with these records are all of one family, except the cow Clothelde. It can be seen by this that the Holsteins hold first

honors now as a great milk and butter breed, and further, that great results can be produced by careful breeding, care and feeding.

Unquestionably the Holsteins are a superior breed of cattle for dairy use, but whether they contain the combinations that should be combined in the general-purpose cow, or a cow suitable for all purposes, such as the farmer demands, has yet never been as fully established as it has been with the Short-horn cattle. In former years the Short-horn cattle were bred as much for milk as beef with a great many breeders; at least milk was one point that was always kept in view, and we have sufficient evidence in their history to show that, on an average, they were good milkers. Of late years they have been bred more for beef than milk, and on this account their good milking qualities have been somewhat marred, but still they hold third honors as a milk and butter producing breed, and as for beef, milk and butter combined, they are first on the list, while the Holsteins are no doubt next. That the Holsteins are superior to the Jerseys as a dairy cattle is no longer in doubt or question, as all we have to judge by is the results obtained from the best specimens of each breed, and, as the former has gained the honor, that certainly settles the question; and further, on an average they are far superior to the Jerseys, for they give so much more milk in the same time, and produce as much butter as the milk of the Jerseys will, and have more and a better quality of skimmed milk left for other use, which is quite an advantage to the farmer or dairyman. From experience I am led to believe that it is a great mistake to suppose that the best and most profitable butter cow is the one that makes the most butter from the least milk, for the yield of butter being equal, the credit will be in favor of the cow that gives the larger flow of milk and the better quality of

milk after the cream is removed. And this honor certainly belongs to the Holsteins, for their skimmed milk contains a large per cent. of casine and other solids, which makes it valuable for making cheese, feeding stock and other purposes.

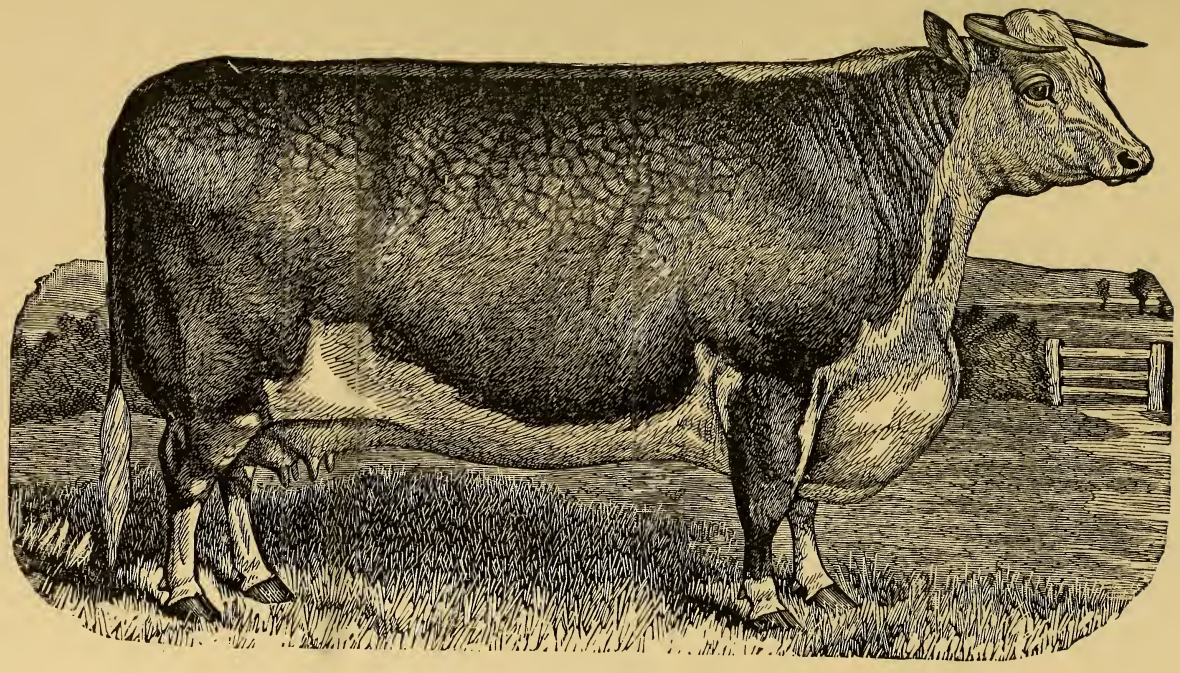
But with the all-purpose cow, like the all-purpose horse, it is impossible to unite all the good qualities into one animal, or an animal that would suit all persons and locations; and each breed in the future, as now, will, and should have its admirers, and its work to fulfill, while some are used to furnish the choice butter and milk for the more wealthy, who are able and willing to buy a choice article at a good price, others will be used to furnish the milk, cheese, and beef for the masses.

NOTED STEERS.

At the fat stock show in Chicago, Illinois, in 1884, the Aberdeen Angus steers, "Waterside Jock" and "Black Prince," showed the merits of this breed as beef cattle by winning some of the principal prizes. "Water Side Jock" was nine hundred and ninety-nine days old, weighing 1,815 pounds, and won the first prize as a two year old on the block. "Black Prince" was three years old, weighing 2,300 pounds, and won first prize in his class on foot.

At the same time and place the cross-bred steer "Roan Boy," by a Hereford bull, and out of a Shorthorn cow, won some of the principal prizes, including the silver pitcher given by the Breeders' Gazette for the best fat steer of any age or breed.

Probably the largest steer ever known or exhibited in America, was on exhibition in 1885, by J. R. McGregory, of Ripley, Ohio. He was a fair mountain of flesh, and could be compared to no other animal, except an elephant. He was dropped in Decatur County, Indiana, in 1879, being then six years old, and weigh-



THE HEREFORD

ing 4,250 pounds. The author had the pleasure of examining this steer on the 22d of May, 1885, in Circleville, Ohio, where he was on exhibition. Mr. McGregory, at that time, was exhibiting him and a small Teeswater, or Currey cow, only 34 inches high, and weighing three hundred and fifty pounds, in the cities and towns of Ohio. The steer was a rich roan, and measured six feet four inches in height, eleven feet and four inches around the girth, three feet and four inches between the hip joints, and eighteen feet from tip to tip. He was consuming one bushel of corn, sixty pounds of hay and from eighteen to twenty gallons of water daily. He was said to be about three-fourths Short-horn, with a good sprinkling of the blood known as Seventeens, which he showed very much in the head and neck, also from the shoulder to flank. He was very fine in the brisket and rump, wide, straight back, well sprung ribs, and had clean, strong, good bony legs that would carry all the flesh that could be put on him. He was only in moderate flesh and was very active. The little Currey cow was giving some two gallons of milk a day, and was very much admired. She was a dark red, and compactly made, which is characteristic of the breed.

As said before, this is supposed to be the heaviest steer on record, althougb there have been several heavy steers spoken of within the last twenty-five years weighing from 3,500 to 4,000 pounds, and all were composed of the Short-horn blood, and generally a good sprinkling of the Seventeens.

HOW TO SELECT BREEDERS.

In the selection of cattle as breeders, as much care and judgment must be used as in selecting breeders of any other stock. The characteristics desired should be strongly marked with the animals so they will transmit those characteristics, whether beef or milk, to their

progeny. Unless for good reason, an animal of a certain color is wanted, I would say, as with the swine, do not be too particular about the color; better discard the color than any other good point. Any of our pure breeds are true enough to their color, but quality is the first and most essential point. Frequently at public sales of Short-horns, a first-class roan animal is offered, and the knowing ones will whisper around that it has a cross of the Seventeens in it. That was an importation of Short-horn cattle made in 1817, and known under that name. They were not thought to be strictly pure blood, and frequently would sell at a low price as compared to a dark red one that may have been sold before it. But any farmer who wishes a good animal as a producer of stockers, had much better risk that one than a cherry red one, that may have a cross of Devon in it. One of the most essential points in any breeding animal is constitution. This, with cattle, is observed by a good coat of soft, silky hair, mellow hide, well sprung ribs, being good around the heart, with a strong, clean cut, neck and head, and a brilliant eye. Animals possessed of these qualifications, of either sex, and a clean, bony leg, are most always vigorous and good handlers. Other good points are a broad, straight back, prominent hind quarters, well let down to the hock on a straight leg, full, deep barrel of medium length, with a full brisket and medium shoulder. The shoulder and the head with a bull should be more prominent than with a cow, and also the horns—if they have any, but either one should have a slim, bony tail.

THE CONTOLLING INFLUENCE.

The common accepted theory is, that the male parent has the greatest influence upon the offspring in outward form, etc., while the female exercises a controlling influence on the vital functions. This cannot

always be relied upon in practice, but is a very safe rule to be governed by. Therefore, in the selection of breeders, it is best to keep in the mind's eye the characteristics desired in the progeny, and select accordingly. If beef is the desired quality, select those of a large, compact form, that show by good handling that they are capable of making a rapid growth and maturing quickly. If milk is the desired quality, select females that are prominent in the milk producing points, such as prominent udder and milk veins, heavy hind quarters, a full, deep barrel, wedged-shaped shoulders, slim neck and clean cut head. In selecting a bull he should be purely bred, of whatever breed desired, and strongly possess, as said before, the characteristics desired in the progeny, and if his ancestors were possessed of the same characteristics, he is all the more valuable. Very often a good breeding old bull can be purchased for considerable less than a young bull, and the risks to obtain the desired results are much less. These points serve to emphasize the truth that nothing is so trustworthy as assurance that a given animal will be valuable as a breeder as the fact it has produced good offspring in the past. In view of this, the high esteem in which young and untried animals are often held is only a theory and not well founded. And the claim that a great many breeders make, that to obtain heavy milking cows, the heifers from choice milch cows, regardless of their sire, should be saved, is an error. Breeders of long experience have proven that choice milch or butter cows are obtained by the use of bulls that had for their dams, noted cows, that contained the characteristics desired. These bulls bred to native cows, and the female produce retained, as a rule, gave better satisfaction than those obtained by the former plan. But the best results are always obtained by using both sire and dam

which contain the characteristics sought, and the deeper those characteristics are interbred, that is, if their ancestors have possessed the same characteristics, for two or more generations, the more likely will the progeny possess the desired merits.

HANDLING STOCK.

The term "handling stock" is a technical one, more particularly applied to cattle than other domestic animals, but a practical knowledge of it, even in sheep and swine, is considered important in this country, as well as in England, by all breeders, and is thus described: In order for visitors to judge better of the quality of the animals submitted to their inspection, I think it is important that they should know what handling is; and although it is difficult to define in words, I will make the attempt, at the same time suggesting to every one who has not a practical knowledge of it to get some person who has, to give him lessons direct from the animals he is inspecting. It is this: When the fingers are moderately pressed upon the fleshy parts of the animal, and the hair, hide, and especially the flesh beneath have a fine, soft, elastic spring, it is called good handling: on the contrary, if they are coarse, thick, hard, and rigid to the feeling, with little or no spring under the pressure of the fingers, that is called bad handling. Of course there are many degrees in handling, from very bad to very good, as there are grades of animals. The better an animal handles, the quicker it feeds, that is, the sooner it will mature and become fully grown for the purpose of breeding or fat for the butcher, and a good handler will do this at a much less consumption of food than a bad one, therefore is much more valuable.

BREEDING FROM SHOW HERDS DANGEROUS.

Inexperienced breeders cannot be too often warned against purchasing breeding stock at public sales or

elsewhere that have been fed and pampered for the show-yard. In the height of the Short-horn speculation it did not make much difference; then barren show cows were carried from place to place, and appeared first in one breeder's catalogue and then another's until they finally drifted out of the current and were stranded high and dry in the hands of some unsophisticated outsider, where they were never again heard from. Experienced people steer clear of these show-yard animals, or at least will not buy them without a distinct and specific warranty that they are breeders; and it will be well for all who buy at public sales, made up mainly of old show herds, to follow their example. If these cattle fail to breed, they are worth simply what they will bring for beef, and no more; and the purchaser should have a distinct understanding to that effect before he makes a bid upon an animal old enough to breed, that does not show for itself. Breeders who offer stock that has been in the main bred and raised by themselves on their own farms are not much troubled with barrenness in their cows, and when such cases occur they are usually sent to the shambles at once; but show-yard animals, and those that have again and again been fitted up for the auction block, are so frequently made barren by the high feeding and forcing to which they have been subjected, as to put every experienced man on his guard when such animals are offered.

THE SCIENCE OF IN-AND-IN BREEDING.

Although in-and-in breeding is strongly condemned as ruinous to the vigor of stock, yet it is an admitted fact that animals produced in this way transmit their qualities more prominently than do those that are the result of careful selection from different strains. Inbreeding as practiced on some farms is not done under the guidance or direction of the farmer, or some

experienced person, but in a careless and irregular manner. Inbreeding is a science, and demands the most careful judgment, as it permits of no middle ground whatever. Its tendency is either to improve or deteriorate the stock. Without inbreeding we would not be favored with many of our choicest and most popular breeds, as all of them have been established by a persistent inbreeding in order to fix the characteristics desired. Lord Western, in his effort to make a superior breed of hogs, resorted to but a single out-cross upon the Essex, which prompted him to use the Neapolitan as an admirable animal with which to blend the proper proportions of lean and fat, and even this out-cross may not be considered as such, the Neapolitan being really one of the original breeds upon which the experiments were begun. It was only by a judicious selection of the strongest and most vigorous of the herd that success was attained. Had the herd been left to breed in-and-in without a guide to assist in the selection of the best, the Essex hog would have passed out of existence long ago. Later on, however, even careful selection could not prevent the breed from gradually becoming enfeebled and weak, when the Berkshire, itself a closely inbred hog, was used to infuse new blood, and the process of inbreeding was again persisted in until at the present day we have a perfectly black hog without a white spot of any kind, which breeds true to color and stamps its features and merits on all its offspring.

The Jersey cattle are closely inbred. But few pedigrees can be traced that do not run into one or two progenitors of the whole, and our best butter strains have all descended from a single family. The rule of late years has been to select for breeding purposes only cows that have made records for butter production, they being closely inbred for that purpose. The sur-

prise is that such animals maintain their constitutional vigor, but, happily for the breeders, the test of butter production is also the test of vigor, as the best cows are those that are vigorous and capable of digesting and assimilating sufficient material with which to accomplish the purposes desired; yet, with all the care that may be exercised in the matter of selection, the animals that prove superior are few as compared with the number that are not so fortunate. The results of inbreeding may be plainly noticed by even the most casual observer, in the delicate shape and structure of all Jersey cattle.

Nor can the horses be said to be exempt. Breeding close into the Messenger blood, through Hambletonian, has certainly increased the speed of our trotters, and admitting that the instinct of trotting has been more firmly impressed, and yet there is a much larger proportion of failures compared with the success attained, i. e., there are more horses that cannot trot fast than there are that can. The form of the trotter, as well as that of the thoroughbred, shows plainly the work of inbreeding, for while the spirit and will force have been increased, it has required an occasional infusion of new blood (not, however, altogether foreign) to retain the stamina so essential to the roadster.

One of the mistakes of inbreeding is the infusion of new blood through the male line. It should be through the female line only, as mistakes may be more easily corrected. The sire may improve or damage a whole herd or flock, while the dam is limited to the production of a single animal, and should she prove undesirable may be easily supplanted by a substitute, which is not so easily done in the male line. The breeder, however, is the one who really prevents injury, for a knowledge of his work permits him to

study the characteristics of each animal from its birth to maturity, which affords him ample opportunity to lay out his plans with a definite purpose in view. Thus, in the hands of a skilful person, in-and-in breeding is at times an advantage and a science, but if not done judiciously it is hurtful and baneful. When any new breed is first introduced, in order to obtain the results desired, inbreeding cannot be avoided, although the blood lines united should not be too close, as father to daughter, son to mother, or brothers to sisters. But if grandson and granddaughter or granddam, or grandsire and granddaughter are mated, and no cross closer than this is made, it will very likely be attended with good results in begetting the characteristics desired. This is very noticable with our trotting horses, of which we have ample evidence. Let anyone inquire what horses have been the most successful of late years as stallions in producing speed, and, with very few exceptions, he will find those that are the most successful have been closely inbred. The effects of in-and-in breeding have been much discussed, especially though the agricultural journals, and it is a subject upon which there is a great difference of opinion. But breeders of all kinds of live stock hold that it is the only true method by which any fixed type can be obtained. There seems to be no doubt of the truth of this, but in-and-in breeding is something that should receive careful attention by those not thoroughly versed in the matter of selecting and crossing the blood lines that will produce good results.

STOCK RAISING THE MOST PROFITABLE.

There is no pursuit on the farm that affords greater pleasure or gives such sure profits as raising stock or operating a dairy. Not only is the produce of the farm more easily marketed when fed to the stock, but the fact of converting it into meat, milk or butter en-

hances its value and increases the profits in proportion to the labor expended. There is another feature in stock raising, and one of the most important, which is that the farm becomes richer every year. Therefore, when computing the actual profits obtained, we should calculate and enter into the account the value of the improvement made upon the farm.

The greater the number of animals that can be comfortably kept upon the farm the better. The more stock, the greater the fertility of the soil, and, hence, the larger the crops each succeeding year, which in turn permits of a still larger number of animals. And in raising stock the matter of improvement is a prime factor in the enterprise. Good feeding is important, but good feed gives the best results when good stock only receives it. The breed and the trough are twin essentials, and cannot be separated without loss. Fill the trough full, but let it be emptied by animals that are capable of converting the contents into the largest quantity of available product. There should be no waste of food nor loss of time. Use the most perfect animal to be found, if not too costly, for crossing on common stock, and thus grade up. Pure breeds, of course, are best, but if the foundation must be laid on common stock, make it a point to use only a purely bred sire. Aim to improve the stock, and the stock will improve the farm. The task is an easy one, but requires some little attention to succeed.

For profitableness we look to the animals as a machine. We know that in almost every line of industry machines are constantly being replaced by others that can turn out from the raw material a larger percentage of manufactured product. In just the same way, if it is desired to produce meat, the old native animal should be replaced by Short-horns, Herefords, or some of the other beef producing breeds, as their

grades are greatly superior and more economical meat-making machines. If for the dairy, by the introduction of the Holsteins, Gurnseys, Aysshires or Jerseys, good results will be obtained. It is foolisnness — it is financial stupidity — to keep and feed a scrawny, scrub steer or cow in these days of Short-horns, Herefords, Gurnseys, Jerseys, Ayrshires, etc. Good grades can be had anywhere, and at prices not above the reach of ordinary farmers. Farmers can at least secure a few good native cows, and from a good bull get good grade stock.

The two rules given are not based on theory. But their soundness has been demonstrated in practice, but they are not so widely adopted as they should be. There is an astounding number of scrub animals in existence to-day, racing along the road in summer, and shivering under straw stacks in the winter, which, the sooner they are abolished and replaced with good stock, the better it will for the owner. The author has often wondered how it is, that in this progressive age, when improved stock of all kinds is so plentiful, and can be had at prices within the reach of every farmer, or at least by a couple of neighbors combining and buying a purely-bred sire, that there are so few owned in some sections of the country. He is well acquainted in sections of the country that are well advanced other ways where there is not more than one purely-bred bull in a township, and not more than a half-dozen purely-bred male hogs, and not even one good horse. Why is this? Every farmer certainly knows that any improved stock is far superior to our common natives, and knowing this, he certainly knows that it would not only be better for his purse, but the country at large to own them. By giving this often urged subject more careful thought, I am certain it will be adopted by many upon the first opportunity, and when a first-class

male animal is introduced into the country, that is suitable to their wants, they will at once patronize it.

GROWING OR FEEDING CATTLE.

The growing of cattle, like the growing of any other stock, to be profitable, should be well conducted from birth during all seasons of the year, and the one successful principal of stock feeding kept in view; that is, to feed liberally from birth until the animal is disposed of. The proverb "well summered is half wintered," however true, is no more so than it is reversed — well wintered is half summered. Properly summed up, both propositions but amount to this: there is no time when the stock owner can permit his stock to deteriorate the thrift without inviting loss, and quite often, disaster. The beginner who expects to find any time during the year when his vigilance as an overseer, and liberality as a provider, can be relaxed without detriment to his stock, will have such delusion thumped out of him by the costly cudgel of experience, if he fails to heed in time the warnings of those who have come up through tribulations they would have him avoid, that he will wish that he had looked more closely after them during both summer and winter. It is poor economy to allow animals to run down during the fall, expecting to winter them well, or during the winter months, expecting that in the spring, when the grass comes, they will recover and grow the same as if they had not been stinted.

Cattle may live and get through the winter on corn fodder and straw, but generally it will take much of the spring and summer to recover what is lost. Instead of being ready for the market at two years, they must be kept longer, in order to make a slow growth.

We cannot reasonably expect stock to thrive in the best manner without grain during the winter. The amount of course depends upon the quality of the

other feed. The best guide is their condition. They must not, under any circumstances, be allowed to run down. It costs too much to regain what is lost. I am aware that the old custom was to keep cattle until they were three or four, and even five, years old. Hogs were not expected to have attained sufficient growth to fatten until they were from eighteen months to two years old. Of course improved stock has considerable to do with early maturity, but not all. Good stock, in order to grow, must be well fed. It is as easy a matter to stunt a full-blooded animal as a scrub, and good feed from the start will aid wonderfully in bringing out a scrub.

Experience has taught us that, in order to receive the most profit, we must push stock right along. Give them a start to grow, and then keep it up by good feeding and good care. During the winter, as often as possible, give them a change, as they soon tire of one kind of food, and a change is beneficial. Generally corn is the main reliance, and as a whole it is one of the best, if not the best, stock food we have. Yet, with all this in its favor, a change to something else is beneficial.

Good shelter will save feed, and if one must economize in feeding, do it by providing warm shelter. Not only will stock be in a better condition, but less feed will be required to keep them growing. The principal secret in profitable stock raising and feeding is to keep the animals growing, and yet to do it with the least possible expense.

Cleanliness should not be overlooked. To thrive well stock must have clean quarters, and when confined during the winter this requires work; but it will pay. See that they have plenty of litter, and that their quarters are kept as clean as possible. Where one has no barn room, very good shelter can be made

by erecting rough sheds or wind breaks. Often this can be done with very little expense, and no difference how rough the structure is, so it breaks the wind off. The building of two high fences close together and filled with straw or prairie hay, rough sheds erected and covered with the same material, or a hedge fence banked up with the same, will answer much better than nothing at all. These structures should surround a high, dry piece of ground, and then the corn fodder fed on as small a scope of ground as possble, so as to form litter enough for dry bedding. Providing shelter for stock, simply as a question of economy in the consumption of food, cannot be considered in any sense an undue pampering calculated to render animals less hardy, or to detract in the least from their constitutional vigor. On the contrary we believe that suitable shelter, to which stock can resort in case of storms, will tend to promote these qualities. An animal can perhaps endure the full force of a regular blizzard, but it is only at the expense of a certain amount of vital force, which must leave it in a worse condition than an animal which has not been called upon to endure this strain. There is much of the time when it makes but little difference whether the animal has shelter or not. In clear, cold, dry weather healthy live stock appear to be in a large degree insensible to ordinary extremes of temperature; but the snows, accompanied or followed by winds which sift it into the hair, where it slowly melts from the effect of animal heat, tell very severely upon the condition of the stock. We have often observed that the storms coming late in the season or toward spring, when snows are damp and often mingled with rain, are more deleterious than those of midwinter. When the hair is dam or wet there is a constant evaporation of moisture which robs the animal of the natural heat and puts its powers of

endurance to the severest test; and animals that have been subjected to all sorts of extremes and exposure during the whole winter, approach the close of the season, the most critical period of all, with depleted strength and vigor, and in the worst possible condition to withstand the severer trials which are then before them. As has been before suggested, it is not necessary that permanent or expensive structures be provided, but if nothing else can be afforded, poles and straw make a shelter very good while it lasts.

When possible, all fodders should be fed in racks and thus avoid waste. Some use a long manger, others a rack of some style. The way to form a very good rack is to set four fence posts in a square twelve feet apart, board up all around three feet high, as for a fence, then place a center post and run boards diagonal from one corner to another each way, thus forming four three cornered racks, in which to put the feed. This can be made and set down, and then moved when desired. Again, cattle should be salted regularly twice a week, or rock salt placed in a trough where they can have free access to it, which is much better, as then they will only take a small amount at a time, and more frequently.

WATER FOR STOCK DURING WINTER.

See also that the animals have a good supply of water, and not half ice. It is often the case that a large proportion of Western farmers make very poor provision for supplying their stock with water during the winter. Springs that afford a supply of water that is moderately warm are scarce, and few of these that exist are utilized to the extent they should be. Generally the water for the supply of farm stock is procured from a well in or near the barn yard, and is raised by means of a hand pump. The water is often nearly at the point of freezing when it is drawn, and

is ordinarily conveyed into a trough that is lined with ice, and the animals that drink the water suffer severely from cold. It is often the case that there is but one trough in the yard for the accommodation of a large number of horses, cattle and sheep of different ages, and this is generally surrounded by ice on which the animals are likely to slip and receive injuries. The younger or weaker animals suffer most because they are hooked or pushed by those that are older and stronger. During very severe weather many farmers allow stock to have access to water only once a day, and as a consequence they drink so much that they suffer from cold produced by taking so large an amount of water into the system at once

If practicable, stock should be supplied during the winter with water furnished from a spring, as it is generally several degrees warmer than that drawn from a well. But where this cannot be obtained a well that will supply ample water for all the stock is next best, and by the use of one of the many improved methods now in use for drawing water, and suitable tanks for holding it, there is no need of any one's stock suffering for this much needed want. The well should be covered at all times to prevent anything falling in it, as should be the trough into which the water is conveyed in the winter to prevent the water from freezing. The practice of bringing water into barns and stables has given excellent satisfaction wherever it has been introduced. When it is not practicable to convey water into the building where stock is kept, a trough for holding it should be under sheds, and surrounded by stones or plank's that can be kept free from ice and snow. Young stock should be allowed an opportunity to drink while the animals that are liable to molest them are out of their way. In severely cold weather it is better to carry water in buckets to colts and calves

than allow them to suffer the exposure necessary to obtain it in an open yard. Unless during storms of long continuance, animals should have an opportunity to obtain water at least twice a day. If their only food is dry hay, straw, corn fodder and corn, they require considerable water in order to digest their food properly.

FEEDING CATTLE UPON GRASS.

Of late years, the feeders of cattle have been experimenting in feeding corn upon grass, and in all instances, where it has come under the author's observation, the results have been satisfactory. Some have tried feeding old corn in the spring when turning their cattle upon grass, and continue it through the summer, while others have delayed the feeding until later in the season, and then feed old corn, while others waited until fall, when the new crop of corn was fit to feed. In each instances good results have been obtained, but most always in favor of the latter plan, which no doubt, is the correct method of feeding cattle. For with them as with swine, there is no doubt but that there can be more pounds obtained in this way than any other, for the following reasons: First, the new corn is softer than the old and not as hard to masticate and digest; therefore more nutriment is obtained per bushel, as it is not as apt to be passed off undigested. Second, the grass at this season of the year is not so plentiful as in the forepart of the season, and unless some grain is substituted in its place, the stock is liable to shrink in flesh, thereby loosing part of what has been already gained through the summer.

Another argument in favor of feeding corn upon grass is, that cattle being fed corn or other grain all winter, their stomachs have become contracted and incapable of holding a sufficient quantity of grass to enable the animal to make a rapid growth. This is very noticeable with some cattle that have been heavy

grained all winter, that when turned upon grass, for a month or more they make no gain whatever, while cattle that were "roughed through," that is those that had received little or no grain when turned out upon grass would gain rapidly. This proves as said before, that concentrated food will contract the stomach, and it is not capable of holding the amount of grass needed to stimulate a rapid growth of the animal, and proves that grain should be continued to be fed to fattening cattle for a while at least, when they are turned out in the spring, until the grass becomes more hard and strengthening. This subject of feeding stock upon grass has never been given as much thought, nor the method as extensively adopted as it should be by the general stock growers and feeders, as most of them are contented to follow the old plan, of feeding grain until grass is ready to turn upon, and then turn the cattle out and let them go until the grass was all gone in the fall before commencing to feed grain again. In this age, when every means must be adopted in order to make the credit side of the ledger overbalance the debtor side, it would be well for all growers or feeders of cattle to give this subject some thought and a trial. Corn fed upon grass to stock when the weather is warm, will certainly produce better results than when fed during cold weather and probably in the mud and principally alone. If old corn is being fed, it no doubt pays well to soak it twelve or twenty-four hours before feeding, as by this means the grain becomes softened and swelled, and it is much better masticated and digested by any stock than if dry. Another advantage in feeding corn upon grass to cattle is, that the spring pigs can be allowed to follow them at a great advantage, as the droppings of grain fed cattle are suitable to the wants of young pigs or hogs to insure growth, and the

food is all saved, while in the winter it is lost to a more or less extent.

SELECTING FEEDERS AND THEIR CARE.

One of the first and most important matters for the person who intends to fatten cattle to consider is, in selecting the cattle, to select those that will best suit his wants. Of course anyone knows that those of good blood are the best and will give the most profitable returns. Therefore this should be the first consideration; second, that uniformity of size, form and color is another consideration, for as each individual animal may be of good quality and blood, yet if they are of all sizes, forms and colors, they will not command the admiratio n nor as good a price in the market as a herd that is of uniform color, form and size. Color is of the least importance, but even this often makes quite a difference. The most prominent characteristics of cattle that take on flesh readily are, first, a short broad head with ample width between the eyes, and a good mouth that can close upon a goodly quantity of grass or other food while eating. With stock as with man, time is money, and the animal that can fill its stomach with food the quickest and lie down to rest and convert it into flesh is the most profitable to its owner. Second, the neck should be long and fine, and the brisket well let down between the front legs which, should be well apart in order to give ample lung room. Cattle with long, slim faces, short necks and light briskets should be avoided, for they are generally of a nervous, roaming disposition and slow feeders, making them unprofitable. Third, the barrel should be of good length and depth, and the ribs well sprung, which denotes good constitution and gives ample room to carry a large amount of food, which is an essential point. Fourth, the back should be broad, short and smooth, wide between the

hips, flanks full and well down, hide soft and plyable and covered with a good coat of silky hair. The legs should be short, straight and fine and the animal stand squarely upon them; add to such a fine tail and you have an animal that should be satisfactory to its owner.

One important feature in selecting a herd of cattle to fatten is not to select them from a warmer country than you expect to feed them in, or those that have been kept in barns, if you expect to feed out doors, for the change would certainly be a detriment to them. After selecting a herd of cattle to suit your wants, the next thing to consider is how they have been fed and kept. That care and feed should not be better than you expect to give them if you wish them to be profitable to you, but you should be able to improve upon that keeping in order to obtain the best results. In order to obtain these results, feed liberal, but no more than will be eaten up at each feed. Never keep a large amount of food before stock if you wish it to do well. They should only be fed what they will consume at each feed, and should receive this regular, as cattle are naturally animals of very regular habits, and know just when to expect their feed, and should not be disappointed, for they will be sure to be there to receive it each day or time, at the appointed time, without fail; and also the same way as to water or salt, both of which they should have an abundance, kept within their reach, so they can obtain it when wanted, for they understand regulating that want.

Again, a change of pasture or feed lots, or the introduction of strange cattle into the herd should be avoided as much as possible, for such proceedings always disturb the cattle and causes them to do poorly for a few days. Remember that quiet and contentment is essential to the thrift of all stock.

THE BULL AND HIS CARE.

In the selection of a bull, it should be borne in mind that he is one-half of the herd, and knowing this, it more forcibly reminds one of the fact that the selection should be made with discretion and care, for only by using good judgment can an improvement of the herd be made. He should be purely bred of what ever breed one desires, and possess such characteristics as are desired in his offsprings. If beef is the object, or one of the main points desired, he should be of good size and compact form, i. e., square, blocky appearance, upon short legs, with a short, wide head, set upon a fine but masculine neck, of good carriage, which denotes courage, one of the most essential points. The brisket should be heavy and well let down, as also should be the flanks and hind quarters; wide between the front legs, with well sprung ribs, which denotes good constitution; broad, straight back, wide between the hips, barrel of medium length and great wedth and depth, which shows he is capable of carrying a large amount of food, which will produce flesh. If milk or butter is the object most sought, the above points should be somewhat observed, but the animal selected should be from a family noted for their heavy production of milk or butter or both combined. This is just as important as it is to select a bull from a family of cattle that is noted for their great growth and quick development, for the begettal of cattle that possess those characteristics, or as it would be to select a standard bred trotting stallion, or a thoroughbred one, for the production of fast trotting or running colts. Like begets like, which is something in stock breeding that should never be lost sight of.

When once the bull is procured he should be confined in a well-fenced grass lot, away from the cows or other stock, and when wanted for service, the cows

should be turned into the lot to him, as they are more easily gotten in and out of the lot than he is gotten back into the lot; and if not allowed out at all, he is not liable to become breachy. Again, if he is allowed to run with the cows he is liable to become cross and troublesome to other stock, and will also exhaust himself by unnecessary service. In this lot should be a stable for his use at all times of the year, and his feed should consist of a mixture of corn, oats, mill feed, cut feed, hay and corn fodder, in the winter, and in the summer, if not used too heavy, plenty of good grass, is sufficient, but where being used for a large number of cows he should have some grain; and some method to provide him with plenty of fresh water at all times, should also be arranged, and a piece of rock salt put where he can have access to it at all times.

CARE OF COWS AND CALVES.

Cows, to be profitable, should not be neglected, and allowed to become poor at any time of the year; for no neglected, delapidated, or run-down cow can ever be profitable to her owner. No matter what they are kept for, beef, butter, milk, or the raising of calves, the profits will depend upon their thrift, and when well fed and cared for, they pay cash down, and ask no trust. In the summer they should have an abundance of grass, and where their range is small, and the grass not sufficient to support them, fresh grass or provender of some kind should be mowed every day, and given them, or in absence of this, grain should be given them. In the winter, plenty of good food and shelter is necessary if any profits are to be derived from them, and the warmer and more comfortable they are kept, the less food they will require, and the better will be the profits obtained from them.

The philosophy of keeping animals warm and quiet is simply this: Part of the food animals consume is

used just to keep the machine running. It is only the surplus above this that can be used for the production of meat or milk. Now the percentage of food used in running the animal machine depends upon circumstances. The animal that is just warm enough and quiet enough to be comfortable and healthy uses much less food in maintaining the animal body than one that is exercised violently and is kept cold. It takes food to maintain muscular activity, and food must also be used as fuel to keep the animal warm. The colder the room, the more the fire is needed. It is possible, for the warm, quiet animal to obtain a surplus for production from a ration that would just maintain the animal kept in the cold and in a less quiet condition. Does it pay to leave a window open in the room where we sit, and then burn twice as much coal as is necessary in order to keep warm? Does it pay to burn an unnecessary amount of hay and grain in order to keep animals warm?

It seems to me that it is much better to provide shelter for them, and save the feed. The man who does not study and seek to understand the requirements of his farm stock and their care should never be a farmer. A farmer should have the well-being of his animals constantly in mind; and not only that, but their comfort ought to be of as much importance to him as his own. Not only ought this to be looked at from a dollars and cents' standpoint, but from a humane one also. A man who has not enough humanity to make his stock comfortale, without any other consideration, is not a typical farmer.

Cows not well cared for cannot be expected to give much milk either for the dairy or their calves, or do well upon dropping their calves. A great many cows annually die thus, by neglect.

IMPROPER MILKING.

Again, many farmers milk their cows too near the time of calving, and a great many good milkers are injured by this practice. The physical welfare of both cow and calf, together with the quantity and quality of the milk, are materially affected by thus overtaxing her, and she should be allowed to reach the time of calving in the best condition possible. A cow should go dry at least six weeks, in order to gain flesh and strength before calving, and when not on grass, should be fed with a good milk producing food, as mill feed, oats, clover hay, malt, and roots. Thus properly fed and cared for, the cow will be strong and able to nourish the calf and provide milk for it after birth. Cows that are heavy milkers should be looked after for some time after calving, and see if the calf takes all the milk; if not, she should be milked clean twice a day, until the calf is able to take all the milk, or it is taken from her. Some cows, when on good pasture, or well fed, require milking before calving, as well as afterwards, and should be closely looked after and cared for; for if neglected, they frequently are troubled with garget, or milk fever, which is very injurious to them, if not the cause of their death. The cows on the farm that are not pleasant and profitable to milk should be turned out with their calves, as soon as the calf is able to take all the milk and let run. This will pay better than to worry with such animals. When it is desired to make a cow own two calves and raise them, sprinkle the calves with salt. The cow will lick this off, and a repetition or two will often secure a permanent recognition of the calf.

WHEN CALVES ARE REMOVED.

When the cows are expected to be milked, the calves should be taken from them when three days old, or even younger, as at this age they are more easily

taught to drink, and then the cows do not fret after them so much. They should be put in a grass lot, or warm stable, according to the season, away from the cows, and fed for a few days, new milk, or new and sweet skimmed milk mixed, until a week or two old, when skimmed milk will be sufficient. As they become older, mill feed and oil meal can be added to their feed with good results. One gallon of sweet skimmed, or even sour milk, made hot, and a quart of mill feed with a gill of oil-cake stirred into it, then cooled to blood heat, and given a calf, will produce about as good results as fresh milk. Feed can be prepared in this way for a number of calves and put in a trough, and it will not require a very great amount of teaching to have them drink in that way. As they become older, this feed can be increased, or else feed them some dry mill feed and oats, crushed corn, fodder, pumpkins, etc., as the season may afford. When pasture is plentiful, and calves are fed in this way, it is more profitable to keep the calves than to sell them to the butchers. Many a farmer has found himself a hundred dollars richer, without missing the cost, by keeping calves instead of sending them away, and as a general thing, if properly conducted, it is more profitable to feed the milk to the calves or pigs than to make fifteen cent butter. In weaning the calves, when fed in this way, or when they have been running with the cows, they should be fed some other good feed in the place of milk, and kept growing right along, and not allowed to become poor and stunted; and as they increase in size and age, increase the strength and bulk of the feed, never forgetting that the road to success in stock raising is through early maturity. When calves are not intended for any other use than beef, they should be castrated at an early age — from one to four months.

THE FIRST YEAR OF A CALF.

There is not a farmer in the country who raises his own calves but who knows that the future value of them depends upon the first year's growth as a calf. If the calf is half starved, stunted and ill-used, there is not one chance in ten that when it reaches the proper age it will make a good animal, either beef, bull, or milch cow. The calf must have the very best of food and enough of it if the object is to make the matured animal a first-rate one, and indeed it is necessary too, that with yearlings and two-year olds, attention should be given in such manner as to insure the animal plenty of food.

A calf that is intended for a bull, in order to make a first-class animal, should run with the cow until he is five or six months old at least. If weaned earlier he should be fed on new milk just from the cow three times a day untill he is six months old, then twice a day for a month or so longer. When quite young, say a month old, if not on grass, give him a little fine early made hay to eat, and let him have some oatmeal, a little oil cake, vegetables, etc., increasing the rations gradually as he grows older. Weaning from milk should be gradual, and in pasture time, and in its place given some mill feed or ground oats or oil cake meal. Teach him to lead at as early an age as possible, and ring his nose at eight months, and handle him from that time on daily. After he is weaned feed as you would other cattle, to keep them in the best condition. Often a young bull treated in this way will show his superiority before maturity and sell for a better price. In leading him do not handle him too much by the ring. Put on a head halter, run the strap or rope through the ring, then the pull will come more direct upon the head than the nose, and still have perfect control of him. Use him kindly; any abuse

in any way only irritates him, and makes him afraid and cross, while kindness insures success. After he has become older and more self-willed, use a bull staff, with which to handle him. When twelve or fourteen months old he can be allowed to serve a few cows, but he should not go to more than two a week, and should be well cared for as spoken of in the care of the bull.

In growing heifer calves for the dairy, the important thing to accomplish is to grow the frame and muscular system, without laying on much fat. It is a rangy, well developed animal, with a vigorous digestion, that is wanted in the milch cow. The profitable milch cow must be a large eater, and make the best use of her food, in order to produce a large yield of milk. In rearing the heifer for this purpose she should be so fed as to give her a full development of all the vital organs, and this will necessarily bring her digestive organs into special activity.

Fat in the animal body seems only designated to serve as a cushion to the tendons and joints, to fill up and round out depressions, and lastly, as a reserve of fuel to keep up animal heat in case of necessity. It is not the seat of any sensation, has little or nothing to do with the vital processes, and generally is merely inert ballast in the body. The food given, then, should not be designed to lay on fat; food containing an excessive amount of starch or oil should be avoided in feeding heifer calves designed for the dairy, but food rich in albuminoids and the mineral constituents of the body, is what should be sought. Therefore, if the heifer calves are taken from the cows at an early age and properly raised by hand, upon skimmed milk, etc., the results are as good as if allowed to run with the cows, and furthermore, they become accustomed to being handled, and are rather fond of the presence of the keeper, an important feature with a milch cow.

Kindness helps to create a quiet disposition, and this education must begin when the calf is young; any habits acquired when young are apt to cling to the cow when grown.

HOW EARLY SHOULD HEIFERS HAVE CALVES.

There is a great difference in the practice of farmers in respect to how early heifers should have calves. For beef purposes, three years old is probably soon enough; but for a milker, I would have the heifer come in at two and one-half years old, or sooner. She is then old enough to become a cow, and is much more easily taught to be milked than when older, and it is best, as a rule, not to allow her to go dry too long with her first calf, but should be milked up to within eight weeks of calving. A cow thus trained will give more milk and will be more likely to hold out longer in milk, if her after care is judicious and liberal, as it should be. Such treatment tends to form the habit of giving milk; as we know, habit is a sort of second nature, we should endeavor to teach only good ones. To couple the heifer with a bull one or two years older than she is, is preferable to a yearling, and better stock is likely to come from such. After the heifer has calved her feed should be regular and liberal. In absence of good grass or hay, we must make up for what is lacking in some concentrated food, such as oat meal, shorts, oil meal, or the like, but great care and judgment must be used not to over-feed or crowd, as the future cow may be ruined. Undue forcing shortens the useful life of a cow very rapidly.

It is often the case when a heifer has her first calf that the farmer thinks she will not give more milk than will keep her calf in good condition, and lets them run together, to teach her the mysteries of being milked when she has her next calf. In this decision there are two mistakes that go far to spoil the cow for

usefulness. Cows are largely creatures of habit, and with their first calf everything is new and strange to them, and they readily submit to being milked, and think it is all right; but suffer them to run with the calf the first season, and a vicious habit is established that they will hardly forget in a lifetime. If they ever submit to be milked quietly, it is evidently under protest. But there is a greater objection than this — the calf running with the cow draws the milk every hour or two, so that the milk vessels are not distended with milk, though the quantity secreted in a given time may be large. But this is the natural time to distend the milk ducts and expand the udder to a good capacity for holding milk. When, with her next calf, you require the milk to be retained twelve hours, the udder becomes hard and painful, and the milk leaks from the teats, or more likely nature accommodates the quantity of milk secreted to the capacity to retain it, and the cow becomes permanently a small milker, and very frequently learns the habit of holding up her milk. Much of the future character of a cow, therefore, depends upon her treatment with her first calf. Everything that disturbs the quietness of a cow, impairs the milk, both in quantity and quality. To obtain the best results, therefore, there should be a regular time and place of milking, and as far as possible the milking should be done by the same person. Any cow can be milked dry in a few weeks by irregular milking, at intervals of twenty-four hours, and sometimes six. Separation from her usual company, a change to a new location, a strange milker, and, above all, a blustering manner and a scolding voice, are sources of irritation that, more or less, impair the milking qualities of a cow. No cow under the influence of fear will give her full quantity of milk.

UNRULY MILKERS.

The habits that a great many cows form of holding up their milk, kicking or jumping, and running when being milked, are very annoying, and the "theories" of how to break them of these habits are "as plentiful as woodchucks in cherry time."

My experience in handling from thirty to fifty cows daily, in the dairy, for several years, proved to me that the suggestions given in agricultural papers by different ones as to the means for subduing these cows were only "theories." To lay a wet cloth or sand bag across their loins, or buckle a strap around them in order to make them give down their milk, or putting a chain to their leg, or some patent contrivance to keep them from kicking, are all in the mind's eye, as far as a cure is concerned. By such treatment they may be subdued for a short time, but it is only a matter of time until the old habit is renewed. My experience with such cows is this: Unless very valuable as milkers, or for the blood that was in them for breeders, I would fatten and sell them to the butcher. When they are valuable as milkers, shut them up in close quarters where they will be compelled to stand. This takes less time than to run after them. The best place to put them is in the stable in a stall so they can be securely fastened with a stanchion, rope, or chain around the neck. Then if they kick or hold up their milk, change milkers. It is possible, very often, that a cow will object to one milker, but will immediately submit to another. Never abuse or speak harsh to them. Kindness will go a great way toward conquering them. When thus treated, and they will insist upon kicking, take a small rope, fasten one end in a snap; back of that eight inches, fasten a ring, by passing the rope through the ring and tying a knot in it; put the rope around the cow's right hind pastern, and fasten

the snap in the ring. Now tie the rope in a ring that is fastened to the building or post back of her, pulling the foot back far enough just so the toe can rest on the ground. Thus fastened, she is compelled to stand quiet, and this will do more toward conquering her than abuse. When they will insist on holding up their milk, and cannot be subdued, I would keep them to raise calves, or fatten them.

As a farmer said, "A cow is a curious animal. Like some other females, she has a nerve and a mind of her own, and when she gets nervous or makes up her mind, she will have her own way all the time and every time. In her tricks of kicking or holding up her milk, for instance; a cow can never be beat out of it, if she has once learned it. And just look at her quietly and sidewise while you are vainly trying to get a drop of milk out of her udderful, and notice her very peculiar expression. She is looking at you out of the side of her eye, as much as to say, 'I guess you won't.'"

Probably the best method known to make a cow give down her milk, is the Swiss method, a merry singing milk-maid, which attracts the cow's mind from her obstinance.

CHAPTER XVII.

MODERN METHODS OF DAIRYING.

DAIRYING WITH PROFIT—THE BEST DAIRY CATTLE—HOW TO JUDGE A COW—NECESSITY OF STABLING COWS—LESS VENTILATION AND MORE BEDDING—HOW TO FEED AND MILK—THE MOST APPROVED METHODS OF MAKING BUTTER.

DAIRYING WITH PROFIT.

THE dairyman of course wants to make his profits as large as possible. This requires earnest effort and close attention to the details of the business. The making of good butter and cheese, and the selling of good milk, are the first requisites in this undertaking. There are many instances throughout the country of farmers making a grade of butter which sells at fifty cents a pound and upwards the year round, and in active demand even at that, while their neighbors, with equal advantages, make a grade of butter which is hard to dispose of at fifteen cents per pound. Here is where the dairy business is injured, to a great extent; by the manufacture of so much mean, trashy butter, it has opened up the way for bogus butter, and the fine brands of butterine and oleomargarine have seriously effected the market and demand for the better grades of butter. The manufacturers of these articles use every means to make their wares pleasing to the eye and taste; thereby making them preferable to poor butter, and hard to detect from good. This is something that the general farmer should look after more closely and endeavor to

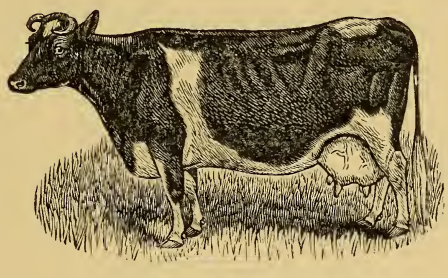
overcome, as the use of bogus butter is not only a positive injury to the health of people, but a curse to the farmer in destroying the butter market. They say the way to destroy an evil, is to commence at the root of it, and the way to destroy the bogus butter market is to make a brand of pure butter that will be preferable, and then it can be ruled out of the market, as the law now is, that bogus butter has to be sold for bogus butter, and not palmed off on the public as pure butter. The law being in favor of the farmer or dairyman, they ought to be able to control this article of food against bogus butter manufacturers. Of course they can make it cheaper than pure butter can be made, for a great deal of cheap stuff is said to enter into the products of its manufacture, such as the lard from choleried hogs, suet from all kinds of beef, etc. This may not be the case in all instances, but is said to be in many

Another thing that must be looked into in making the dairy profitable, is to get a herd of cows suited to what is wanted of them; that is, a herd that will give a large quantity of milk, or a large yield of butter or cheese. The cow that is good for either one of these is scarcely ever as good for either of the others, unless it is for giving a large quantity of milk which will make a large yield of butter or cheese; and consequently it is important that if a large yield of milk is what is wanted, special butter cows are not kept, etc. The food supplied should be adapted to milk secretion and to the secretion of the butter oils. If these points are attended to carefully, it would be of some advantage to the dairy interests.

THE BEST DAIRY CATTLE.

It would be very hard to say what breed of cattle is the most valuable for the farmer engaged in the dairy business. This would have to depend somewhat

upon the situation, and the purpose for which they are used. The ideal general purpose cow, that is pictured out by some of the correspondents of several agricultural papers, will probably never be found; and certainly not among any one breed of cattle; but the farmer's cow should be well-bred, of large size, a good breeder and feeder, and give a generous quantity of rich milk.



THE HOLSTEIN.

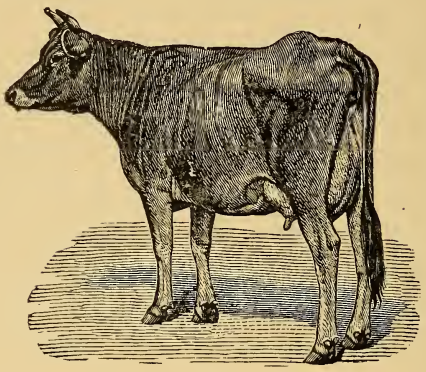
The Holstein breed of cattle, now so popular as dairy cattle, are, as said before, of Dutch or Holland origin, and are one of the oldest established breeds known, though their introduction into this country has been somewhat recent. They have, as is claimed, four merits: first, as great milk producers; second, good for butter; third, as good cheese-makers; and last, for beef. While not as great in general for butter alone as the Jerseys, yet their general excellence in this respect places them in the front as a general purpose breed without any rival, except perhaps, the Short-horns.

In yield of milk or butter they seem to be confessedly at the head. One cow is quoted with a record of 112 pounds of milk in one day; another with 26,061 pounds and 11 ounces in one year; and another with 18,004 pounds, which are said to be the three greatest yields on record; and the Holstein cow Mercedes, is credited with the largest yield of butter in thirty days, making ninety-nine pounds, six and one-half

ounces in that time. While we may not judge any breed of cattle by the merits of a few specimens, yet the Holsteins are undoubtedly great milkers and butter yielders.

The Ayrshire cow, owing to her docility, being very easily managed, is valuable; for dairy purposes, for milk and cheese, she is equal to any other cow of her size, but not as valuable for butter as the Jersey, and is inferior to the larger breeds for feeding purposes.

The Jerseys and Guernseys, and especially the former, for quality of butter, have no superiors. They stand upon the same platform as the Thoroughbred horse. They are each bred for one special purpose: the Thoroughbred horse to run, and the Jersey cow for



THE JERSEY.

butter. No improvement can be made with either one, for their purpose, by the infusion of other blood. But as said before, in keeping cows for the dairy, to give milk or make butter, keep only the kind that will give the greatest quantity of your specialty — butter cows, if it is butter; and if it is milk, then keep cows of one of the milk breeds, of which the Holstein or Short-horn cow has no superior. But no matter what breed you have, something further is necessary in order to reach the best success. A good cow can generally be

produced by good feed and care; a $5,000 Jersey cow will do poorly for butter on the care and feed that many farmers give their animals.

HOW TO JUDGE A COW.

In selecting cows, by close observation very often their character can be told by their countenance, and their quality by their appearance.

"Man is not the only animal which shows his character by his countenance. Nearly all kinds of live stock, and especially cattle and horses, have something significant in their facial expressions. Gentleness and docility on the one hand, and wildness and ferocity on the other, crop out almost unerringly in the cast of the eye, or the pose of the head. An expert horseman can nearly always interpret the disposition of a horse from a square look into his eyes. Experienced dairymen also discriminate largely in the choice of milking stock by their knowledge of live stock physiognomy. The same thing is carried into the fat stock markets. Butchers will nearly always scrutinize the countenance of a bullock before purchasing, and we have often seen them turn away from a handsome beef because it had a 'wicked eye,' which unerringly presaged trouble in getting it from the yards, through the streets and to the shambles. Stock drivers will, when wanted to take charge of an animal, ask to see it, and after a momentary front view will consent or refuse with a promptness which shows confidence in their ability to judge in this way. A bullock will sometimes be avoided by several drivers in turn, and without connivance, too, because he has a villainous 'phiz.' One who accustoms himself to reading the faces of cattle can soon become so expert that he can with difficulty be entrapped into an error of judgment."

Having had considerable experience in handling stock, I have found the following description, as given

by Mr. C. Bordwell, of how to judge a good cow of value. As the character has a great deal to do with the cow, and we must judge that by her countenance, we will commence at the head and first notice the eyes. These should be large and of a bright color, showing a mild disposition. The muzzle should be rather large, but the head small and rather bony, with the face dished and wide between the eyes; horns rather small and amber color; ears small, thin and yellow; neck thin and long, with clean throat; neck will drop a little in front of shoulders, making what I call a ewe neck; shoulders sloping, not heavy but lean or bony; back level with good width of hips. The back-bone should be rough or loose-jointed. I consider this one of the best points. As you move your hand along the back the joints seem to be farther apart and open. Barrel broad and deep at the flank, with the back ribs wide apart. Rump long and rather wide; thighs long, thin, and wide apart, with legs short and bone fine; hoofs rather long but small; milk veins large, and where they enter the body you can stick your fingers in. Udder well forward and well up behind, with four good large teats set square and wide apart. Udder soft and pliable, and not fleshy, so that when the milk is drawn the udder is nearly gone. Tail long and slim, with a good switch. Skin should be soft and yellow, and covered with a good coat of soft, silky hair. The cow filling the above description, or nearly so, I have always found a good one.

In buying a cow, find out for yourself if she is what you want. Don't take anybody's word for it. A mean cow is such an intolerable nuisance that many men, and sometimes other members of the family, are strongly tempted to strain a point in order to get rid of her.

If possible, when she is in milking condition, milk her yourself, or see her milked, and judge her by the milk. To find out whether any individual cow is a profitable member of the dairy herd or not, a separate account should be kept of her milk and butter. If no such pains are taken it is not easy to tell just what the worth of a doubtful milker is. The true policy is to throw out every one which does not yield a profit, and replace her with a better one. It costs just as much to feed a mean cow as a good one. "Better pay well for a good cow than accept a poor one for a gift," is a true saying with dairymen. A good cow is one that will make from ten to twelve pounds of butter a week for ten months in the year, or one that will give from 10,000 to 12,000 lbs. of milk in the same length of time. A poor cow, such as is kept by the average farmer in nameless sections of the country, to my knowledge, will make from two to four pounds of butter a week; average three eight months in the year, and probably give in that time four thousand pounds of milk. New milk weighs eight pounds and eight ounces per gallon. The poor cow will require the same amount of food if kept up, as the good one, and therefore must be kept at a loss.

No man can afford to keep a poor cow for making butter or giving milk. The best thing that can be done where one is saddled with cows that make only four or five pounds of butter a week each, or give but twelve or fourteen gallons of milk each in that time, is to raise stock and feed for the shambles.

MILCH COWS SHOULD BE STABLED.

Mr. J. A. Smith, a Western dairyman, writing of the importance of feed and proper treatment of dairy cows, gives some excellent suggestions on this topic. He says that "dairymen are often surprised at the light weight of their milk the next morning after a cold

rain-storm, through which their cows have suffered unstabled, which is only a natural result of such treatment. The cow does not eat so much, for one thing; and another is, that part of what she does eat goes to repair the waste of her system in withstanding the effects of the storm, and that keeps a per cent. out of the milk-pail, until she has recovered from the effects of such exposure. It is also true that a cow suffering from the want of proper feed or from painful exposure, not only loses in the quantity of her yield of milk, but in the amount of fatty matter it contains. In a word, nature has so organized the cow that she revenges herself on her owner's pocket, for cruel neglect and short feed; and a farmer might just as well try to dodge taxes and death, as to escape the unwise treatment of a cow. In point of fact, when thus treated, she takes the cream first, and gives the owner what skim milk she cannot assimilate. The only way to get a profit out of her is to fill her so full that she runs over, and take the surplus for your gold mine."

These suggestions show the necessity of stabling the cows, so they can be better fed, cared for, and milked.

Milking in the barnyard is an old custom that should be abandoned. It is inconvenient and unclean. It should go with the wooden pail and hairy butter, and never again be brought to life; gone and forgotten.

Why do farmers not awake up to this long neglected necessity, and at least make some effort to provide a cleanly and respectable place to put their cows while milking? And why is it that farmers' wives and daughters do not rebel against such unjust treatment?

It is just as easy, and far more convenient to put the milk cows in the stable all times of the year, at milking time, as it is to leave them out in a lot; for in

this way they are rid of the cold and mud, or heat and flies, and can remain quiet while being milked, instead of being chased around through the mud and snow. It is no wonder that farmers' daughters want to marry some city chap, who does not keep cows. And we are not at all surprised that they should marry from the city or so as to get off of the farm. If we were placed in the same situation as many of our daughters on the farm are, we surely would command and urge as a necessity, a change in this line; but just try to build a cow-stable, so that the cows can be put up at all times to be milked, or at least when it is necessary, during a wet or cold time, and then see if the girls, as well as the cows, will not be in a better humor.

There is a prejudice among many farmers against keeping cows tied up in the barn the greater part of, even the wettest and coldest days. It is claimed that the animals will not be healthy unless they are allowed the freedom of the yard all day. I have seen herds of animals belonging to well-to-do farmers standing backed up to cold winter blasts, or vainly trying to obtain shelter from a storm. I have also seen cows, under the irritation of the cold, chasing and hooking one another around the yard during the greater part of the day, and cows giving milk, too. Now this is not a rare occurrence. There are a great many days in the winter when stock should not be out of doors longer than to give them an opportunity to drink. Milkmen know that the flow of milk rises and falls in quantity, as the temperature rises and falls during the winter season, unless the cows are so well sheltered and cared for that they do not feel the severity of the cold. The object in having a cow stable is not only to make it more convenient to milk, but to protect the cattle from cold and wet weather, as well as to aid the keeper to feed in the way that will be of the most

benefit to the stock with the least expense of food. It is the care in feeding and keeping that gives the profit, and these points must all be kept in view when arranging a stable. No one can build a permanent cow stable without expense, but such a building will soon pay for the cost it will incur. If built the merits will soon become evident. The owner will soon say that he cannot get along without it, and his only regret will be that it was not built sooner. In building stables for cows, as well as for horses, there are so many plans, that I will not attempt to give any; all that is required is to have them convenient dry and clean.

There is possibly no more repulsive sight than a cow-stable in which dirty cattle are housed. It has been demonstrated that cows neglected in this respect to yield a perfect flow of milk, and that the milk is tainted by the odor of the stable; and it is reasonable to suppose that such is the case. The richest of food may be given to them, but if the condition of the stalls is neglected they will not thrive nor the milk be pure. The foul odor of a filthy stable must necessarily permeate not only the animal's hide, but it has been proven that the meat of stall-fed steers, fattened under these circumstances, is unwholesome; moreover, the milk, even during the period of milking, is liable to absorb the filthy emanations from such stables, and to become absolutely poisonous. It would seem, therefor, reasonable, that owners and dealers in cattle and milk should appreciate the importance of cleanliness and its relation to health, even as a source of profit.

EXTRA VENTILATION RARELY NECESSARY.

It is a rare thing to have a stable so tight that any extra ventilation is necessary in the winter. Where this is the case, ventilators should be so placed that there will be no cold drafts upon the animals. In order to insure this they should be placed as far away

as possible from the stock. In no case should they be placed on the windward side of a stable, but should connect, if possible with another building to prevent draft, and one in which the air is somewhat tempered. The ingress and egress of air should be at opposite ends to insure circulation, and at the same time prevent a draft, which would be more likely when placed near each other. The ventilators should be few and small, and they should be latticed, overlapping each other, which would prevent strong currents. There is but little danger if stables are daily well cleaned out, of the air ever becoming foul enough or close enough to injure stock. The necessity of ventilation is usually more of a whim than a necessity. When a stable is cold enough to freeze, ventilators are never required. To my mind, cattle sleeping on ice or frozen chunks of manure, is a barbarism that a humane or economical farmer would not tolerate. One would suppose that the dreams of the farmer, tucked up in a feather-bed, on a winter night, while his cattle were obliged to rest on an icy floor among frozen manure, could not be very pleasant.

GOOD BEDDING NECESSARY.

It is economy to give the horse, cow, and other stock housed through the winter, a good bed. It has much to do toward saving food and keeping stock in a thriving condition, to say nothing of the obligations man is under to provide well for the dumb animals for him given to have "dominion over." Better to give stock comfortable beds through the usual seasons of necessary shelter and stabling, as they can be provided with very little difficulty and expense. There is usually refuse fodder, straw, or other matter, which can be utilized and made into manure by this process. A large amount of the excrements, by this practice, which would otherwise be lost, can be saved. Fine

sand makes a good bedding material and a good dressing for any heavy soil. Sawdust is another article which can be used advantageously for the same purpose, upon heavy clay soils. There is no farmer who cannot provide plenty of litter, of some kind for his stock, and this by all means he should do and will do, if he understands his business and consults his own interests.

HOW TO FEED AND MILK THEM.

Cows, in order to be profitable, must not only be generously and regularly fed, but their milking should be done at as regular hours as possible, winter and summer. The cows don't have watches, but they know when business hours come around, and are fretful if the business don't go on. Their feed will depend upon the time of year. During the best of the grass season, they may not need much if any feed, but if stabled at milking time, it is best to give them some dry mill feed, as it not only prevents them from scouring, but entices them into the stable. When the grass is scarce or begins to get hard, the mill feed can be increased in quantity and quality, or else some fresh grass cut and put in the stable for them. The main object in feeding summer or winter is to give a variety, at least enough of a change so that they will not get tired of any one kind. Corn is the great fat-producer and should be mixed with the winter feed, but if crushed or ground, and mixed with cut hay and steamed, or fed wet, it is better than if fed whole. A rich fodder, as clover hay, needs less meal, while a poorer one, like straw or corn fodder, needs more. Cattle that are being fattened should also receive more meal than the heavy milkers. The feeder himself must regulate the amount given. He should be able to feed each individual one of the herd the quantity

and quality necessary, and so keep them thriving by giving enough, but not too much.

To aid in mixing their feed, there should be a large trough close to the hay cutter. This trough should also have a sheet-iron bottom, and be fixed for heating or cooking, if wanted for that purpose It takes but little additional expense to have the apparatus fixed for cooking. When so arranged small potatoes, turnips, pumpkins, and mangolds can be used to the best advantage. They are far more easily digested when cooked and do cattle more good. These and mill feed, barley or malt, mixed with cut clover hay or sheaf oats, form the best of milk producing food, and it is considered an established fact that the quality of milk is controlled by the quality of the food. How important it is then to give to the cows none but the best and purest food. With no other stock is this so essential, for the reason that it has been fully demonstrated by competent authority that the milk is a very prolific source of transmitting disease germs from impure food, and especially from impure water. Pure water — and no other kind should be tolerated under any circumstances — should be supplied to the cows, all they will drink, three times a day.

In feeding cows for milk it is a common practice to give each cow a pailful of water in which a liberal quantity of bran has been stirred. This produces a large flow of milk, especially if the water is warm, but it is a big chore to feed a large number of cattle in this way. The importance of water requires that it should be handy, and a good plan is to have a tub or trough so arranged at the well as to protect it from frost in the winter; this filled with fresh well water and a liberal amount of bran and a little salt stirred in it, will help to promote a great flow of milk. A rapid, expert milker, who is at the same time kind and con-

siderate to the cow, can also do much to increase the yield of milk. Slow milking of cows never secures the full product. The cow becomes tired of relaxing the udder muscles, and after a time resumes the more natural position of contracting them. This makes much stripping necessary, and a slow milker will never have patience to strip a long time. Partial milking soon dries the cow, and greatly reduces her value.

Always treat your cows kindly, have quiet attendants, feed well, milk quickly and cleanly. Discharge all help that are noisy, or that would strike or abuse the cow.

In driving the cows, never hurry them; as when their udders are full of milk, or they are heavy with calf, it is very likely to do them permanent injury.

Besides the suggestions already given I will say that the way to make money in dairying, is to keep the best cows, give them first-class treatment, use the best methods of cheese or butter making, and keep your eye on the market. Don't keep a poor milker, and seldom sell your best cows. The best cow for the dairy is not necessarily a thoroughbred; it is the one that yields the most milk or butter.

While I do not wish to lay a straw in the way of progress of fine dairy cow breeders, and while I admit the excellence of the Jersey, Ayrshire and Holstein,

yet I do protest against the constant revilement of our native cows. No animal on the farm is treated worse. Struggling among ragweeds in almost grassless pastures, furnishing blood for flies in the blazing heat of mid-summer, the effect of wrath, hail, snow, sleet, rain and polar winds, she still survives, ever patient and returning good for evil. If our abused native cow was treated half so well as her foreign cousin, perhaps she would be as famous as they.

MAKING BUTTER.

In making butter remember that it is all important to suit the tastes of your cnstomers. Let your taste be subordinate to theirs.

In packing butter for the various markets, or furnishing it direct to customers, it should be salted and put up in packages to meet with favor. One of the first essentials to a good package of butter is the use of a pure dairy salt, free from any injurious ingredients, and one that will retain the flavor and good-keeping qualities of the butter. The use of poor salt, perhaps more than any other cause, has been the means of more loss to the dairymen of this country than can be readily estimated, especially when butter is held in storage for a higher market, the poorer grades of salt imparting a fishy or racid flavor, detracting in value from one to five cents per pound.

In salting butter, one ounce to the pound is what is generally used. Butter should be exposed as little as possible to the air from the time it is churned until packed tightly in tubs, fit for market. Care should be taken never to overwork butter, as the grain and texture should be preserved. This point should never be lost sight of.

Equally good results can be obtained by washing or working the milk from the butter, when skillfully done under favorable circumstances. In either case

the only object is to free the butter from the milk, with as little injury to the flavor or grain of the butter as possible. In washing butter the danger is mostly in injuring the flavor by introducing foreign matter in the water, while in the other case, their is more danger in overworking, and so injuring the grain. In localities where pure water cannot be obtained, washing should not be resorted to, for butter is always sure to take up the impurities contained, as it will taint of any decaying vegetable or animal matter that may be near. Many wells and springs which are thought to be pure and good have in them decaying substances which render them entirely unfit for any use, much less to wash butter with. Decaying organic matter so introduced into butter acts very much like yeast in dough; at least, it starts a fermentation, so to speak, which soon destroys the butter. Allow no surface water to get into the spring or well, or any filth to remain in them, and if they are not highly charged with lime, mineral or salts of any kind, there is no better or easier method than to wash the milk out quickly and thoroughly before salting.

It is very difficult, if not impossible, to make good butter without having a good milk room. All the other conditions may be good, but if the milk be set in a room where the temperature is not right, or the air bad, the result may be poor butter. This fact is too often over looked, but not as frequently as formerly. It is now very generally known that, to make good butter, milk must not be kept in the same room with boiled vegetables or other cooked food; or where there are vegetables as in a cellar. But it is not so generally understood as it should be that the milk room should not be where there is any chance for disagreeable odors to come from adjoining rooms. Too many settle down in the idea that if they have a room ex-

pressly for milk it is all that is required; but this is a mistake. The milk room should be so far away from the cook room that it should be impossible for the odors which arise while cooking to enter it, though the door is opened.

If the farmer smokes tobacco he should be very careful never to smoke even in a room adjoining the milk room, or to go into the milk room after smoking, until the odor of the tobacco is out of his clothing, which, if he smokes very often, will not be until he gets a new suit. There are but few substances that absorb odors like milk or butter.

All buckets or cans that receive the milk should be kept clean and sweet. The milking should be done quickly and the milk put away immediately in the milk room. As soon as the cream separates from the milk, which is in forty-eight hours or less, according to the temperature of the room, or appliances used, it should be churned, and not allowed to stand and become rancid. Keep a thermometer with which to test the cream, and churn it at a temperature of sixty-three degrees. Never try to secure the proper temperature by pouring water in the cream or testing it with the hand, but apply hot or cold water on the outside of the can, and get the temperature by the use of the thermometer. Wash the butter with pure cold water, add the proper amount of salt, one ounce to the pound, and coloring before commencing to work it. Avoid the use of the hand in working it. Use a ladle, or what is better, a lever. Don't spat it or draw the ladle over to smooth it, as that breaks the grain. As soon as the milk is all out it can be prepared for market by putting it in prints, or rolls, and wrapping each one separate in a clean muslin cloth, wet in strong brine.

Use good ash tubs or scalded stone jars for packing. Butter should be packed in solidly, so that when turned out it will not be loose and full of holes. Tubs should be soaked in good strong brine, or else thoroughly steamed, then weighed, and the tare marked plainly on each tub. Fill to water measure. Soak the cloths well in brine, and have them large enough to cover the entire top. It is now ready to go to market, or to be put in a cool place free from all animal or vegetable odors.

PACKING BUTTER IN BRINE.

This method of packing butter for its more perfect preservation, and one which is very effective, has long been in use in England. "It is to pack the butter in cylindrical bags of muslin, which are put in a mold for the purpose. These bags hold about two pounds, and when filled are tied tightly and packed away in brine in tubs, pails, or casks, and are headed up just as pickled pork is." The butter will absorb no more salt, is perfectly free from atmospheric exposure, is enveloped in an antiseptic fluid, and is therefore entirely safe from change, excepting so far as this may occur internally from within by natural process called ripening. But this change goes on so slowly that the butter merely acquires a high and agreeable flavor, and no strong scent or taste is developed which would approach rancidity.

This manner of packing butter has long been in use in some districts of England, and the supplies furnished to the large universities of Oxford and Cambridge, have been put up in a similar way for many years. The butter is made in long rolls about two inches in diameter, and these are wrapped in muslin and the edge secured by some stitches, the ends being tied.

Another method for packing butter, and one which is well adapted for the general farmer, is to work or wash the butter until it is free of milk, then pack well in a good sweet jar or ash vessel; cover the top over with a wet cloth; press down close all around, and cover with salt some two inches thick. When wanting to add more butter, remove the salt and cloth, pack as before, then replace the cloth and salt. Butter thus packed during the fall months will keep sweet and good until late in the spring.

The American Horse.

A MODERN, PRACTICAL, AND RELIABLE

Treatise on the Horse,

GIVING A BRIEF HISTORY OF THE DIFFERENT BREEDS AS TO THEIR ORIGIN AND CHARACTERISTICS, WITH VALUABLE INFORMATION ON VARIOUS SUBJECTS, AS TO BREEDING, REARING, SHOEING, AND THEIR EDUCATION, EITHER FOR THE FARM OR ROAD, FOLLOWED BY A PRACTICAL TREATMENT ON THE DISEASES OF HORSES, CATTLE AND SHEEP.

CHAPTER XVIII.

THE DIFFERENT BREEDS OF HORSES AND THEIR CHARACTERISTICS.

THE ANCIENT HORSE—WESTERN PONIES—CANADIAN KANUCK—THOROUGHBRED—AMERICAN TROTTING HORSE—THE PACING ELEMENT—THE DRAFT FAMILIES—THE CLEVELAND BAY.

THE ANCIENT HORSE.

THE horse is mentioned in Scripture at least fifteen hundred years before the Christian era. To what country he was indigenous is left in doubt; but from the information given in the Scripture, it is reasonable to presume that Africa was the home of that noble animal.

Horses are not supposed to be indigenous to the Western continent; at least none of the first discoverers have left on record any evidence of their existence. History shows that Columbus, in his second voyage to this country in 1493, brought over horses, the first, no doubt, that ever saw the Western hemisphere. According to Herbert, in 1604, an enterprising French lawyer, M. S. Escorbot, brought horses and other domestic animals into Canada, from which descended the Canadian Kanuck, that for many years prevailed extensively in that country, and still exists, to some extent. In 1609, the English colonization ships, landing with immigrants at Jamestown, Virginia, brought over from England six mares and one horse, besides cattle, sheep, and swine. In 1625, horses were imported from Holland to New Jersey by the Dutch West

India Company. In 1629, Francis Higginson, an English emigrant, brought over horses and mares to Massachusetts, from which descended the first stock of New England. From these beginnings and subsequent importations, many millions of horses have spread over the United States. Some of the noblest steeds and greatest performers in the world are numbered among our running and trotting celebrities, of which I will speak hereafter. The horses found in the wild state on the prairies of North America, are undoubtedly descendents of the fine Spanish horses escaped or let loose in the exploring expeditions of De Soto and other adventurers, especially from the horses that escaped in the Spanish wars with Mexico and Peru.

The blood of the Barb and Turk, known as the Arabian horse, predominates in these ponies to a great extent, which, no doubt, accounts for their durability, for it is known that they are "tougher than a steak from a Texas thoroughbred steer." These ponies predominate all over the West, and are known under different names, according to the locality, as the Mexican, Texas, or Indian Pony, California Mustang, and in the Territories as the Cayuse, or Spanish horse.

THE CANADIAN KANUCK.

This breed is supposed to be of Norman descent, and originated from the horses brought over from France by the first settlers of Canada. They possess the general characteristics of the Norman, without degeneration or any material change excepting that of size and color, which is attributed to the cold climate and scanty food on which they have been raised, and to a cross of the Norman and Arabian. They were the first draft horses bred on the western continent, and spread rapidly over the country, especially in the States east of the Mississippi. They are a valuable

agricultural and general purpose horse, for a rough country, as they are active, easily kept, and grow fat at hard work. They stand from fourteen to fifteen and one-half hands high; possess an iron constitution, with strong muscled quarters; large bone in proportion to size; sound feet and legs, free from spavins, ringbones, or other hereditary defects. They perpetuate their strong points and leading characteristics to their issue, and when crossed with highbred trotters or thoroughbreds, increase the bone. Many of our now noted trotting horses possess the blood of the Kanuck, as obtained through Old Pilot, a noted pacer brought from Canada to New Orleans, by Mr. Chas. Barker, in 1835, and from there taken to Louisville, Ky. He was a black horse, fourteen and one-half hands high, and could pace exceedingly fast. It is clained that he paced two miles in 4:27, but was such a lugger on the bit that he had to be worked with a peculiar rigging attached to the saddle, in order to hold and control him. This rigging consisted of a stout crupper extending from the saddle to the tail. Attached to this was a regular harness breechen. Long, line-like reins extended from the bridle-bit back through the reins in the breechen, then back again through the rings in the bridle bit, and then up to the saddle. Thus rigged, the little "black ram," as he was called, could fairly fly, and from his loins, through his grand-daughters, have such trotters as Maud S., 2:08¾, and Jay-Eye-See, 2:10, been produced. As to the breeding of Old Pilot, other than he was a Kanuck, no account is given, but no doubt he possessed a goodly quantity of pacing blood, of which there is some strains in Canada.

The breeds of horses which now prevail, and are so establishsd in the United States as to deserve particular description, are the Thoroughbreds, American trot-

ting horses, Normans, Clydesdales, English cart, Shire horses, and Cleveland Bays or coach horses.

THE THOROUGHBRED HORSE.

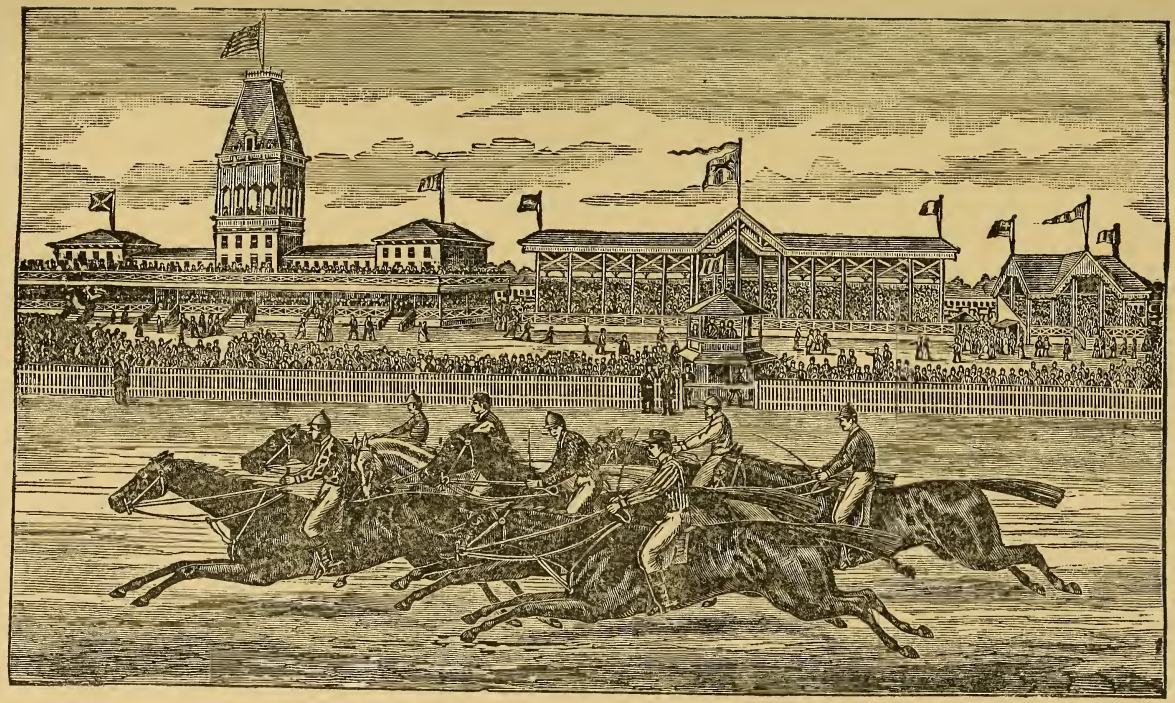
As ordinarily applied by breeders, the word "Thoroughbred" simply means purely bred, or of unmixed lineage, and in this strict sense none of our domesticated animals can justly be called Thoroughbreds, except the English running horse, because they all have more or less composite ancestry. When, however, a certain strain or race has been bred within itself, without an outcross to other or different strains, for many generations, until a marked and peculiar type is uniformly produced, that race, or strain, or breed is said to be thoroughbred, or purely bred.

The term Thoroughbred was first applied only to horses in Great Britain, bred especially for racing purposes, and was adopted as the name of the breed, and is still used for that distinctive purpose. Consequently, when one speaks of a Thoroughbred horse, all intelligent horsemen understand that the race or running horse is meant. No horses are recognized as Thoroughbreds in this country that do not show an unbroken line of ancestry, on both sides, to animals recorded in the English Stud-book. No intelligent horseman will speak of a thoroughbred Morgan, a thoroughbred trotter, or a thoroughbred draft horse, because, as before stated, the term, when applied to horses, belongs only to one particular breed, the running horse, called Thoroughbreds.

Mr. Youatt says: "There is much dispute as to the origin of the Thoroughbred horse. By some he is traced through both sire and dam to Arabian origin. Others believe him to be the native English horse improved and perfected by judicious crossing with the Arabian horse, the Turk, Barb or Bendoin, which, without doubt, is his true parentage."

England is entitled to the credit of originating and perfecting the Thoroughbred in its present form. The Darley Arabian, Godolphin Barb, Byrley, and Turk, were among the most distinguished progenitors and founders of the breed. The Stud-book, which is an authority acknowledged by every English breeder, traces all the old racers to some Eastern origin, or Arabian horse. If the pedigree of an English racer of the present day be required, it is traced back to a certain extent and ends with a well known racer, or in obscurity. For an American Thoroughbred, it traces to a well known racer or an imported Thoroughbred. It must, on the whole, be allowed that the present English Thoroughbred horse is of foreign extraction, improved and perfected by the influence of the climate, and by diligent cultivation. The beautiful tales of Eastern countries of somewhat remoter days, may lead us to imagine that the Arabian horse possessed marvelous powers, but there can be no doubt that the English Thoroughbred horse is more beautiful, far swifter and stouter than the famed courser of the desert, and those bred in America have proven themselves equal to, or superior in speed, to those bred in England.

Most all the noted stallions that have proven successful in the studs, were imported; among which were Bonny Scotland, Hurrah, and Kryle Daly, owned by Mr. John Reber, of Lancaster, Ohio, and all of which have become noted; especially Bonny Scotland, which was, beyond doubt, the greatest Thoroughbred that ever honored the American soil in the way of sireing speed. His get have won more races and purses than the get of any other Thoroughbred stallion by far, and sold for better prices. Bonny Scotland was not appreciated while owned by Mr. Reber, but when sold, and after passing through two or three parties hands, he was put at the head of the Bell Mead breeding farm



CHICAGO RACE COURSE.

at Nashville, Tennessee, where he soon became very popular and died the King of thoroughbred stallions. Hurrah and Kryle Daly, while owned by Mr. Reber, established their popularity, and in the winter of 1884 Kryle Daly was sold for $8,500, and taken to California. Among other noted stallions, we find Lexington, Big Tim, Longfellow, and Grinstead. Grinstead is owned in California and stands at $500; the highest price ever asked for the service of any Thoroughbred horse in America.

In former days the race horse was not brought upon the course until matured, generally at five years old. The consequences were that they remained sound, competent to be trained and run well at an advanced age. Now the system is changed. The majority of breeders start their colts at two years old, so as to give them a reputation for early maturity, and they train off or break down at three or five years of age, and the majority go off crippled into the stud.

Whether the introduction of two year olds upon the race course, that they may astonish the public by their fleetness, is best, is a question which more concerns the sporting man than the agriculturalist, and yet it concerns the agriculturalist to some extent; for racing is principally valuable as connected with breeding. But the breeding of the Thoroughbred horse is a business that belongs to men of ample time and means; for it takes plenty of both to make it a success. That the breeding of Thoroughbred horses is legitimate, in which any farmer may honorably be engaged is too plain to admit of denial. It becomes simply a question of how far this almost universal passion may be carried. But whether it is wrong to run them at so early an age as two years, and cripple or ruin them for life, as is often the case, is a question that is easily answered in the affirmative, and is a prac-

tice that should not be tolerated by the breeders. The horse as is susceptible of pleasure and pain as ourselves. He was committed to us for protection and for our use; he is a willing and devoted servant. Whence did we derive the right to abuse him? Self interest speaks the same language as reason in prompting us to take care of him.

THE AMERICAN TROTTER.

This celebrated and valuable breed of horses is of American origin, and is thoroughly composite. It is made up of different elements of blood of the Thoroughbred horse crossed with the native American mares, and their produce so inbred, that now the trotting horse is a distinguished breed, and more valuable than any other known. The horses which were most noted as the founders of the breed, and which became famous, are, Juston Morgan, Rysdyk's, Hambletonian, Andrew Jackson, Mambrino Chief, Blue Bull, and Pilot Junior. Further on, I will speak of these horses and give their breeding as given in history with a few brief remarks on their value as sires, but cannot give the history of the families in full; to do so, would require a large volume in itself.

THE FOUNDER OF TROTTERS.

The founder of the best trotting families was the imported horse Messenger, brought from England to Philadelphia, in 1778. The lineage of this noble sire traces back in the male line to the Darley Arabian, the sire of Flying Childers, but with the suspicion of an out-cross through the great grand sire Sampson. On the side of his dam the strain reaches Code, by Godolphin Arabian. From all accounts, Messenger was a horse of superior, though not handsome form, and possessed extraordinary power and spirit. His color was grey, which became lighter with age; was fifteen hands, three inches high, with large bony head, and

a rather short straight neck. His windpipe and nostrils were nearly twice the usnal size, while his withers were low, and shoulders upright, but deep and strong. His loins were strong and the quarters very muscular, while his hocks and knees were very large, yet the cannon bones were flat and clean. He carried his legs under him, and was always ready for action. This description shows but little of the form of the Thoroughbred, yet is typical of the form of his trotting descendents. This form, as well as the extraordinary vitality and endurance peculiar to him, he impressed upon his progeny. which being persistently driven and trained to trot, became more intensified and habituated regarding gait, until we have as the result of this skill of man, and this strain of blood, the final development of the trotting horse of America, the pride of the turf and road. Messenger died on Long Island, in 1808, at the age of twenty-eight, and stood for fifteen year in the vicinity of New York City. The roadsters and trotting horses throughout that section as well as many other parts of the country show that the impress of his blood.

PROMINENT SONS OF MESSENGER.

The following were the prominet sons of Messenger, to whom we trace the many pedigrees of the fastest trotters: Mambrino, Bishop's Hambletonian, Ogden's, Messenger, Engineer, Commander, and Winthrop Messenger. Some of Messenger's daughters have contributed to the different families qualities which have given them prominence. The grandam of young Bashaw, the source of the Bashaws and Clays, was a daughter of Messenger.

PROMINENT GRAND SONS OF MESSENGER.

Among the grand sons of Messenger, Abdallah and Mambrino Paymaster stand pre-eminent- Of this king of stallions, Abdallah, "rough to look at," a son

of Mambrino, and a grandson of Messenger, out of the mare Amazonia, too much cannot be said. In life he was not appreciated; in fact, was so neglected as to yield no profit in the stud, and was sold for $35 to a fisherman, who not being able to work him on account of his temper, allowed him to starve to death. His greatest laurels were reaped years after in the honors bestowed on his sons. During late years his blood has been highly prized in the pedigrees of trotting horses, either through male or female line. Mr. Wm. F. Porter, in speaking of him, says, "Abdallah was foaled on Long Island, and was a rich mahogany bay, and measured about fifteen hands three inches, under the standard. He had a star and very possibly one white foot. He was presumed to be Thoroughbred, but the pedigree of his dam was lost.

Rysdyk's Hambletonian, a son of Abdallah, by Mambrino, by imported Messenger; first dam the Charles Kent mare, by imported Bellfounder; second dam One-Eye, by Bishop's Hambletonian; third dam Silvertail, by imported Messenger, was the greatest progenitor of trotters the world ever saw, and by right of acknowledged pre-eminence, claims our consideration as the first on the list of great stallions. He was foaled in 1849, and died in 1876. His dam being by imported Bellfounder, second dam by Bishop's Hambletonian, son of Messenger, and third dam by Messenger, shows that he was closely inbred. He is described by Mr. Holmes, who knew him well, as a strong, compactly made horse, close to sixteen hands high. His coat was ordinarily of the brightest bay, his legs black, the black extending above the knees and hocks, with white socks behind (in size precisely alike,) and a small white star in the center of his forehead. His pictures are all utterly inadequate to convey any correct idea of the horse."

After the get of Rysdyk's Hambletonian began to show promise as trotters, and especially after Shark, one of his sons, came out and trotted several wonderful races under saddle, from 1862 to 1866, making a mile in 2:28½, and two miles in 5:00½, and after Dexter, another son, came out a year later, and swept everything before him, and in 1867 made a record of one mile in 2:17¼, which for so many years stood as the best performance on record, the "Old Horse," as he has long been called, became very popular in the stud, and was extensively patronized. Another of his sons, George Wilkes, came out nearly at the same time as Dexter, winning many races, and in 1868 made a record of 2:22, which stood for many years as the best stallion record. Then Gold Smith Maid and St. Julian, granddaughter and grandson, appeared upon the turf and electrified the world with their wonderful speed for many years. And they kept coming thicker and faster — first, the sons, and then the daughters, then the granddaughters and grandsons, then the great-grandsons and daughters, until his descendents became the most noted family of trotting horses known, and the irresistible logic of trotting statistics to this day has clearly demonstrated the superiority of the Hambletonian blood over all others.

Rysdyk's Hambletonian commenced service in the stud at two years of age, and continued successfully until two years before his death, when he proved no longer fertile. He served 1,833 mares, and got 1,325 colts. During the first three years he stood at $25, to insure; the next nine years at $35; the next year at $75; the next at $100; the next at $300; and after that at $500. His earnings in the stud amounted to $185,125.

Of his get forty have trotting records of 2:30 or better, or one 2:30 trotter out of every thirty-three

colts. From this it can be seen that from the number of foals he produced, the per centage of 2:30 trotters were small. Some of his sons and grandsons in this respect, and also in the production of horses of great speed have surpassed him. Among those that may be mentioned that stand pre-eminent as great sires are his sons George Wilkes, Volunteer Harold, Electioneer, Happy Medium, Dictator, and Strathmore, and his grandson Almont and Belmont. But it must be borne in mind that they have had the advantage of being coupled with better bred trotting mares, and the colts the advantage of the skill and knowledge of man in educating the trotter. It has been practically demonstrated that neither Rysdyk's Hambletonian, nor many of his sons, have produced sensational trotters when crossed on Thoroughbred mares, although three-fourths of all the sensational trotters belong to the Hambletonian family, but have been produced by the cross of Hambletonian sires with well-bred trotting or pacing mares, or mares of unknown bloods. It is not only true of the Hambletonian family, but with all other trotting families, that there are but few fast trotters that have been produced by breeding strictly Thoroughbred mares to trotting sires, or trotting mares to Thoroughbred sires. Less than twenty with records of 2:30 or better, would cover the entire list out of some 2,000 horses that have records of 2:30 or better.

IMPORTED BELLFOUNDER.

Bellfounder was imported from England, in 1822. He was a remarkably fast trotter for a Thoroughbred horse, and has contributed a most valuable strain of blood to the trotters of this country. At three years old he trotted two miles in six minutes, and at four years old made ten miles in thirty minutes. The Bellfounder cross is highly prized, and is found in the pedigrees of the Hambletonians, Clays, and other

families. Rysdyk's Hambletonian's dam was by this great horse, and her speed, at four years old, was very great, seldom equalled, even in these fast times. She was a handsome dark bay mare, and queen of the road of New York City for many years.

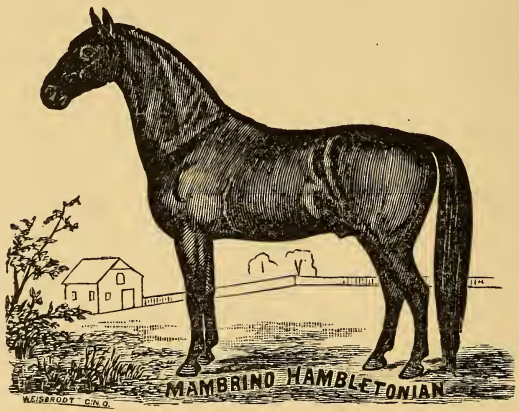
Mambrino Paymaster was another noted son of Mambrino and grandson of Messenger, and his dam was a large black mare, breeding unknown. Mambrino Paymaster was the sire of Mambrino Chief, the founder of the family which bears his name. This strain of blood has become very fashionable and will be found in the pedigrees of some of the most noted sires or dams of sensational trotters.

MAMBRINO CHIEF.

"Mambrino Chief, br. h. 16 hands, by Mambrino Paymaster, by Mambrino, by imported Messenger, was a very fast trotter for his day, having trotted a mile in 2:36, in the year 1854, after having made a season in the stud. But besides being himself a fast trotter, he possessed the most remarkable power of transmitting the ability to reproduce trotters in his descendents. He was foaled in 1844, and spent the earlier part of his life in New York, where his opportunities in the stud were limited. He was afterward taken to Kentucky, and after making but seven seasons in the stud, died in 1862, at 18 years of age, and just at the beginning of the war, which hindered the development of his get for many years. In spite of this, and notwithstanding the fact that the development of the trotting horse was then but little understood, nine of his get trotted better than 2:30. Among these was the great Lady Thorne, who beat all the great trotters of her day with the utmost ease, including the renowned Goldsmith Maid, whom she beat every time they met. Her best record was 2:18¼, but those who knew her best say that this was no measure of her speed, she

being able to trot much faster." She was credited with trotting a mile in 2:08 in a trial, driven by the veteran driver Dan Mace, and this long before forty pound sulkeys or shin boots, etc., were known. After the trial, Dan said to the parties that timed her, "We will never live to see that mile trotted again."

The opportunities of Mambrino Chief as a sire, were vastly inferior to those of Hambletonian. His services in the stud were comparitively limited; he died before his fame was established, and his get had to contend with great disadvantages. But notwithstanding this he was to the West what Rysdyk's Hambletonian was to the East, the fountain head of a great trotting family. And history establishes the fact beyond question that no other stallions ever lived, of which we have any record, who possessed the power, to a greater degree, of transmitting to their descendents, running through successive generations, the ability to reproduce trotters, capable of the very best performances, with unerring certainty as the great stallions Mambrino Chief and Rysdyk's Hambletonian.



This cut, as taken from life, represents the standard bred trotting stallion, Mambrino Hambletonian, and his general appearance shows the characteristics of the two families which he represents. He is a dark

bay horse, 15¾ hands high, and weighs 1,125 pounds. Sire of Stranger, record 2:22½; two miles 4:59. Coal Dealer, trial, 2:24; Red Jacket, stallion, trial, 2:26. He was sired by Ashland, by Mambrino Chief; first dam Blinker mare, by Rysdyk's Hambletonian; second dam by Young Patriot, sire of Volunteer's dam; third dam the Charles Kent mare, the dam of Rysdyk's Hambletonian. Ashland's dam, Utilla, by imported Margrave; second dam, Too Soon, by Sir Leslie; third dam, Little Peggy, by Gallatin, he out of imported mare Mambrino, by Lord Governor's Mambrino, sire of imported Messenger.

THE MORGAN FAMILY.

To this celebrated family of trotting horses, too little attention has been paid of late years. They, in former days obtained much celebrity as a family of fast and fine road or track horses. But owing to but few of them being able to obtain records of 2:20, or better, and on account of their size, being rather small, they have lost considerable of the celebrity they once obtained. As a family of trotting horses with records of 2:30, or better, they no doubt are entitled to second place, the Hambletonian family holding first honor in this respect, as well as the honor of claiming all the kings and queens of the turf. But as a family of trotting horses for road use, they have no superior when properly bred. They are a smooth, hardy, compact made horse, of fine style, good action and disposition, making them quite valuable for road use, as they possess all the characteristics desired for that purpose in most countries, and especially in cities, where the roads are not so heavy as to require horses of large size. As to the pedigree of the Morgan horse, there is some doubt, but the one as given by Mr. Justin Morgan is accepted as the one entitled to the most credit. The horse, Justin Morgan, the founder of the Morgan

family of horses, was foaled in Massachusetts, in 1793, and brought from Springfield, Mass., to Randolph, Vt., in 1795, where he was kept for many years, and became celebrated as a sire of fine horses. Justin Morgan, ch. h. 14 hands, was sired by True Britain, by Traveller. Dam by Diamond, by wildare, Thoroughbred. He was extensively patronized, and left a numerous and valuable progeny. There were but four of his sons left entire: Revenge, Sherman Morgan, Bullrush and Woodbury, or Burbank. The last three became distinguished sires. But as to the breeding of their dams little or nothing is known. Sherman Morgan was probably the best son of Justin Morgan. He was the sire of Vermont Blackhawk, Sherman Blackhawk, and Vermont Hero, who perpetuated the blood of their sire through a long and illustrious line of trotters. Blackhawk was the sire of Ethan Allen, whose brilliant career on the turf gave him a record of one mile in 2:25, and with running mate of 2:15, but his fame in the stud far eclipsed his successful career of the turf. He was the sire of a great many fast trotters, and also the sire of Daniel Lambert, the sire of twenty-five 2:30 trotters, and the grand sire of H. B. Winship, with a record of 2:06, with running mate. Vermont Hero was the sire of Gen. Knox. Both their dams were of Hambletonian blood. Gen. Knox possessed more Messenger blood than Morgan, and his progeny show it by their records. Woodbury Morgan became famous as a sire of horses suited for martial display, on account of their beautiful form and graceful action. This is characteristic of the Morgan family and very noticeable with horses possessing that blood.

THE BASHAWS, CLAYS AND PATCHENS.

The Bashaws descended from an imported Arabian stallion, Grand Bashaw, which was imported from

Tripoh in 1820, and sired Young Bashaw. Young Bashaw was the sire of Andrew Jackson, who was the most famous trotting stallion of his day, and as a weight puller was unsurpassed in speed. His dam was of unknown blood. She was taken to Philadelphia in a drove of horses from the West. From the loins of this great horse — Andrew Jackson — have descended the Bashaws, Clays and Patchens. He was foaled in 1828, and died in 1846. He sired Long Island Blackhawk, who was the first horse to trot a mile in 2:40, to a two hundred and fifty pound wagon, and from whom descended Green's Bashaw, the Mohawks, and many other trotters of note. Henry Clay, the origin of the Clay and Patchen branch, or family, was a son of Andrew Jackson, and was foaled in 1837. The dam of Henry Clay was a trotting mare of unknown blood, but was both fast and game. Henry Clay was possessed of great speed and endurance. Cassius M. Clay, son of Henry Clay, and sire of George M. Patchen, has done the most to establish the Clays and Patchens.

MESSENGER DUROC.

Duroc, son of the Thoroughbred Diomed, and the sire of Messenger Duroc, whose dam was a daughter of Messenger, is a noted strain of blood, and is found in the pedigrees of the American stars. Mares of this and the Clay and Pilot blood are very valuable to cross with Hambletonian sires to produce speed.

THE PACING ELEMENT.

An important addition to the trotting element to produce trotters of great speed, is the pacing elements, which have been brought out within a few years, the chief elements being the descendents of Young Columbus, the sire of Phil. Sheridan, and Old Pilot, the sire of Pilot Junior; also the Copper Bottoms, Red Bucks, Cadmuses, Hiatogas, Tuckahoes and Blue Bulls. All

have representatives among the fast pacers, and some of the families have assumed the trotting gait with great readiness, particularly the Pilots and Blue Bulls. Their tendency to that gait is shown in the fast horses that trace back to them. The trotting gait with the greatest speed has been produced by the crossing of Pilot mares with Hambletonian stallions. Breeding of this kind produced Maud S. and Jay-Eye-See.

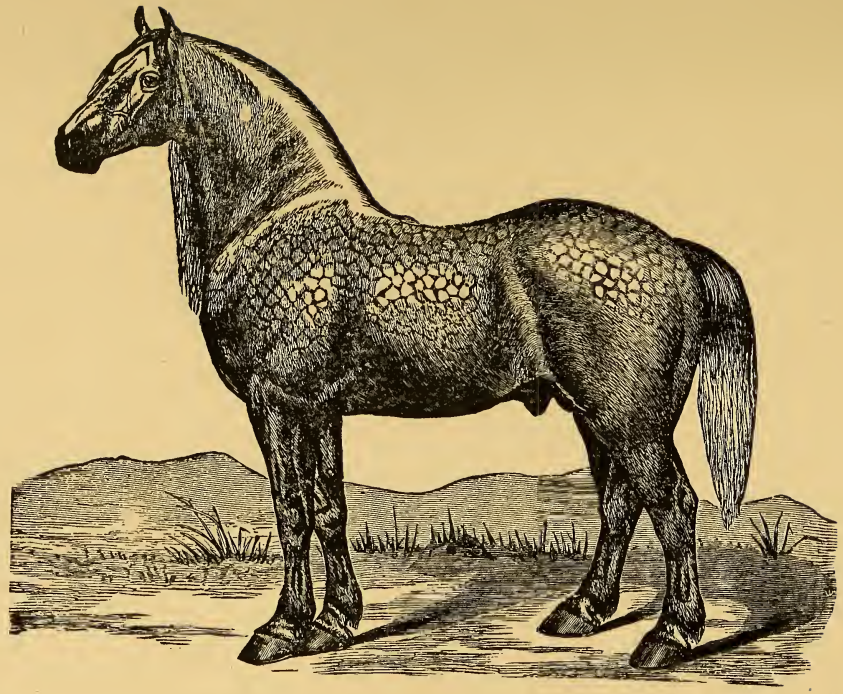
DRAFT HORSES.

American draft horses consist of a variety of breeds, such as the Norman, Clydesdale, English Cart and Shire, crossed with the native mares. The importation of these breeds from their native homes, of late years, has been very heavy, and purely bred ones of their kind or sex are now becoming very plentiful, and as they are being purely bred in this country, as well as in their native country, and on account of the tempting prices offered for the best specimens of the respective breeds, America, no doubt, has now as good draft horses as any other country.

THE NORMAN.

The Norman is a native of France, and a descendent of the war horse used in that country in the early days. The improved Norman horse, known as the Percheron Norman, as now bred, is from sixteen to sixteen and one-half hands high, and weighs from 1,600 to 2,000 pounds.

They are strongly built, with heavy shoulders and powerful hind quarters; big, sound, bony legs, and good feet. They are claimed to be a cross of the old Norman and the Arabian, by the use of the Arabian stallion with the heavy Norman mares, which, judging from their appearance, is no doubt true. They are a very active and quick moving horse for their size; good disposition, and generally of gray color, but often brown or black, and occasionally bay. In regard to



A PERCHERON NORMAN STALLION.

the origin of the old Norman war horse, nothing is known. They have existed in France for centuries, and have a fixed type that must have been bred in the family for generations, because it stamps its imprint so faithfully upon the offspring. The Normans have formed the basis of all the draft breeds that exist in Europe or America.

That the Norman horse possesses the blood of the Arabian or Thoroughbred horse to a certain extent, is no doubt true, and especially the smaller family known as the French Coach Horse, which shows it very much in their general appearance, being a horse that weighs from 1,200 to 1,400 pounds; brown, bay, or black in color; smooth, compact form; clean bony legs and fine cut head, with the best of style and action for a horse of their make. These horses are used in France as road, carriage, or cavalry horses, and for that use, or on the farm, or for delivery wagons in the city, where the work is such as not to require the larger draft horse, they are very useful. But for American use they are not so valuable as the larger Norman horse that has been so extensively imported to this country to cross with our native mares, as that cross produces a heavier draft horse, that is more valuable and serviceable.

The first French draft horse ever imported into Ohio, or west of that, was Old Louis Napolean, imported by Fullington and Martin, of Union County, Ohio, in 1851. He was afterwards taken to Illinois, where he died at the age of 23 years, the property of Dillon Bros.

Dr. Marcus Brown, of Circleville, Ohio, was one of the first men to import the French horse into the West, having brought over the horse Normanda, about 1852, and Black Bob, Dictator, and Dilligence, in 1865. These soon established the character of the Norman

horse in Ohio, and was the cause of many subsequent importations, which has established their character throughout the United States of America. The heavy importation of the French horse soon caused the importation of other draft breeds, and now many parts of America are blest with all the improved draft breeds, which are being in most sections, and should be in all, well received and patronized by the farmers.

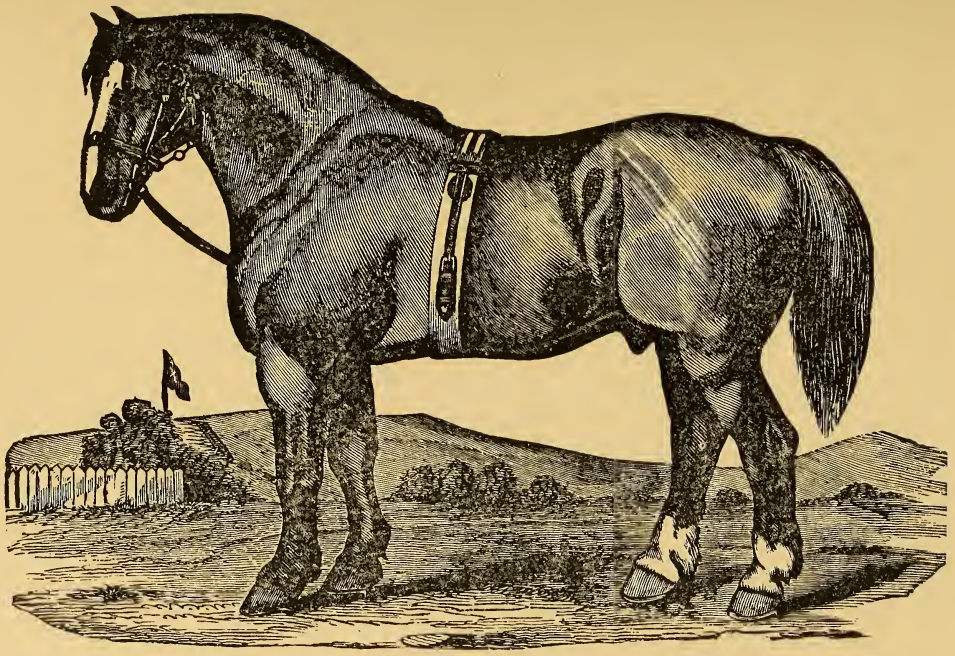
THE CLYDESDALE, THE ENGLISH CART AND SHIRE.

The Clydesdale horse is a native of Scotland, and a very superior breed of horses for draft purposes. Their color is generally bay or brown, with frequently white marks upon the legs or face. They are larger than the Norman horse, and more rangy. Their legs are large and heavy-haired; bone very strong and free of flesh, well set on to a good foot. As a breed of draft horses, for vitality, power and endurance combined they are unsurpassed.

The English cart horse is a native of England, and about the largest breed of draft horses known. In color and make-up they resemble the Clydesdale very much, but generally show the white marks about the face and legs more, are heavier, more cumbersome and slower, but are very valuable for heavy draft purposes about the cities.

The Shire horse is also a native of England and resembles the English cart in color and form very much. Any of these named breeds of horses are valuable to cross onto our native mares to produce large and serviceable horses; and they cannot be too extensively used by our American farmers, as the demand for heavy draft horses is all the time becoming greater.

The Cleveland Bay was formed by crossing the Thoroughbred stallion with Clydesdale or Shire mares. Then in-bred through themselves until a family was formed resembling each other in color and form. They



THE ENGLISH CART HORSE.

were about extinct at one time, but of late years they are being revived and brought to America. They are bay horses, full sixteen hands, very rangy and fine form in front, but often deficient in the hind quarters. Though an effort is now being made in the direction of their preservation and restoration as an acknowledged breed, the animals now being registed are selected rather for type than breeding.

This breed of horses was bred and used by the English as a road or carriage horse, but not being as saleable as the heavy draft horse, and rather slow for road use, they were neglected until the breed became almost extinct. What few were left, or horses resembling the true breed, have been hunted up by horse importers and brought to America, and a hurrah made over them; but they are not taken to very kindly, as it is natural to presume that if they were too slow on the road for our English cousins, they are too slow for us.

As said before, the French coach horse was formed by the crossing of Arabian or Thoroughbred stallions with the heavy French mares, and then inter-bred the same as the Cleveland bays; but they will not likely meet with any more favor than the former, for the same reasons. They lack size for draft and speed for road purposes.

CHAPTER XIX.

THE BREEDING OF HORSES A SCIENCE.

THE ART OR SCIENCE OF BREEDING—RULES AND ERRORS IN BREEDING—BREEDING TROTTING HORSES—SPEED THE MAIN POINT—A STANDARD BRED TROTTER—POPULAR SIRES OF TROTTERS—NOTED BROOD MARES—THE GREAT BROOD MARE FAMILIES—RECORDS OF 2:14, OR LESS—FAST RECORDS ALL DISTANCES—BREEDING DRAFT HORSES—PACERS AS SADDLE HORSES—THE GENERAL PURPOSE HORSE.

THE ART OR SCIENCE OF BREEDING.

PROBABLY in the breeding of no other domestic animal is the art or science of breeding called to so severe a test as in the breeding of horses, and especially fast horses. In the breeding of all other domestic animals, the art of feeding can be called upon to a great extent to cover up the defective points, but this is of little avail in the art of breeding fast horses of any kind, Here the science of combining the fast elements of blood, that have proven successful in producing the kind of horse wanted, has to be used with the best of judgment. The characteristics so derived in breeding running, trotting, pacing and saddle horses, more than in breeding any other animal, comes slow, and any mistake made, either by accident or otherwise, is hard to undo. Therefore, the inexperienced breeder, when contemplating starting in this business, should first give the subject careful study and be sure to start right, as any mistake at this juncture may cause him to abandon the business

in disgust and financial loss. In the breeding of good horses of any kind, the desired qualities should be possessed, to some degree, by both stallion and mares, and the better the blood lines are, running back through several generations, the more valuable it will be, and the more it can be relied upon when called into action. I will herein give a list of rules for the breeding of horses, as gathered from practical breeders, which may prove of value to those contemplating embarking or already engaged in this buisness. If they are committed to memory, borne in mind and adopted they will save some serious mistakes in this most valuable business.

RULES FOR BREEDING.

First, determine exactly in your own mind the kind of horse you wish to produce, and never lose sight of it.

Second, avail yourself of any opportunity that offers to produce the finest animals and blood that will suit your purpose.

Third, avoid unhealthy or unsound animals, unless the blemish is caused by an accident. Ill-tempered or vicious animals are also dangerous. Never forget that if the good qualities are transmitted the evil ones are sure to be.

Fourth, horses that are greatly dissimilar in their build and shape should not be mated to breed. For example, big stallions and very small mares should not be mated, or a large, rough draft mare and a very small horse, as such crosses will no doubt prove a failure to a great extent.

Fifth, avoid the use a coarse, loose-made stallion of any kind, or one that outlooks his size, or a half-breed one of any breed, if the use of a purely bred one can be obtained; and do not breed from mares and horses which, having been mated once, produce bad

colts. A brood mare that has produced a bad colt, if bred again, should be bred to a well-bred horse that is exceedingly good in the points that the colt was deficient in, and if that union proves successful she can be bred back again with safety. If the mare is deficient in any way, select a sound, well-bred horse which is good in the points where she is deficient, whether it be in endurance, body, limb or temper.

Sixth, to breed half-breed horses, select good native-bred mares. The better bred they are the more valuable they will be. They should be young, sound, well-shaped, with good temper, and good action, or a tried mare that has been a successful breeder.

These mares, coupled with a Thoroughbred stallion, which is of good size, compact, well-shaped, sound, healthy and vigorous, with good temper and action, or one that is the sire of good running horses, capable of carrying heavy weight, will produce a good class of horses for the saddle, road or light work. The same mares bred to a purely bred draft horse of any breed, will produce a good class of horses that are valuable for the farm, heavy truck, omnibus or delivery wagon, and always command good prices. Again, this same class of mares would be valuable to breed to a standard bred trotting stallion, to produce a good horse for the farm or road. Mares of this kind coupled with a good trotting stallion, which is sound, and close to sixteen hands high, strong and compactly made, of good color, action and disposition, and is so bred that he is capable of transmitting his good qualities to his progeny, when coupled with all classes of mares, would prove a valuable horse to use, as this breeding will most generally produce a large stylish horse of good color, speed, action and disposition, that is eagerly sought after at a paying price.

ERRORS IN BREEDING.

A great many valuable and well-bred mares are ruined every year by the thoughtlessness or carelessness of their owners in breeding them the first time to a Jack or draft horse. Mares thus bred the first time invariably prove worthless from which to raise a fine bred trotting or running colt, for some years afterwards, as each colt for at least five years afterwards, will show more or less of the characteristics of the horse to which they were first bred. Knowing this to be the fact, it shows how important it is to breed all well-bred trotting or running mares, or mares that are expected to be used to raise trotting or running colts, to a well-bred trotting or running horse the first time, and continue to do so as long as they are expected to be used for raising that class of horses. Afterwards, if they are used to raise draft horses, they will prove more valuable for that purpose, as the colts will show the characteristics of the well-bred horse in color or action to a great extent. Large native-bred mares or draft mares that are suitable for raising draft horses can be bred if so desired, the first time to a draft horse, but should be a purely-bred horse of good color. When once mares of this kind have raised a draft colt, it is best to continue to raise that class of horses with them, for any attempt to raise a fine trotting or running colt from such mares, can only result in disappointment. And the same may be said of that class of mares, even if they have never been bred, when an attempt is made to raise a fast running horse from them, by using a Thoroughbred sire. The only way to raise a fast running horse of endurance is to breed a Thoroughbred mare to a Thoroughbred horse. By breeding a good half thoroughbred mare to a Thoroughbred horse very often a good quarter or half-mile horse is obtained, but never one of great endurance.

The same may be said in breeding fast trotting horses. The only successful way is to breed well-bred trotting or pacing mares to standard bred trotting horses.

By breeding course or draft mares to a well bred horse, or well bred mares to a draft horse, nearly always produces bad results when speed is wanted, and the same is true to a great extent, when a well bred trotting or pacing mare is bred to a Thoroughbred horse, or a Thoroughbred mare to a trotting horse. Such breeding ends in disappointment, ninety-nine times out of one hundred, according to the statistics of the trotting horse. For, as said before, out of some 2,000 horses that have records of 2:30, or better, not over twenty possess the Thoroughbred blood through sire or dam. And still, we often see people, who are of that turn of mind, as,

"Convince a man against his will,
And he will be of the same opinion still."

Or the uninitiated, trying to breed fast trotting horses by crossing the Thoroughbred and trotting bloods, when twenty-five years of experience with many men of brains and money have proven it can not be done with any certainty. Frequently we hear persons speak of the horse Scotland, which was sired by Bonny Scotland, as proof that the crossing of the Thoroughbred blood, and trotting or pacing blood, will produce great speed. True Scotland possessed some speed, enough to obtain a record of 2:22½, but he was rattle headed and could never be depended upon, for when the trotting gait would not win, he at once took to the running gait. And for evidence that he inherited his speed from his dam, Waterwitch, a pacing bred mare, we have this proof, that when she was bred to the trotting stallion Mambrino Pilot, she produced Mambrino Gift, a much faster horse, having a record of 2:20, and far more reliable.

BREEDING TROTTING HORSES.

The scientific breeding of trotting horses is giving this country natural or "ready made" trotters, and the development of speed by man, is not the important factor in producing fast horses that it was at one time. There are but few exceptions to the rule that great speed comes only from speed-producing blood. The more thorough the investigation in regard to this matter the more conclusive is the evidence. Also the more thorough the investigations as to what blood lines produce great trotting speed, the more conclusive is the evidence that it is the trotting or trotting and pacing bloods combined, and not the trotting and running bloods as some would teach.

Breeders of trotting horses, and especially those just commencing the business, would do well to study the breeding of those horses with fast records, to see how they are bred, and they will most likely be astonished to find that the majority of them are bred from a few families, and most all possess the trotting blood through their sires and many the pacing blood through their dams. That the pacing bred mares, or those at least that possess pacing blood, lead to quite an extent, as the dams of our fastest trotting horses, when taken in comparison with a like number of other mares is true; and as evidence that such is the case, I will here give as reference a list as compiled by Mr. D. H. Swiney, which I have given some study and find correct.

Harry Wilkes, 2:13½, that is and has been a sensational horse for years, had a pacing-bred dam. The Queen of the Turf, Maud S., 2:08¾, had a pacing-bred dam. Jay-Eye-See, 2:10, had a dam sired by the same horse that sired Maud S.'s dam. Smuggler, 2:15½, that was king of trotting stallions for so many years, was blessed by a pacing-bred dam.

Or, to make it more easily understood, take the great brood mares with two or more in the 2:30 class and study it. There are 129 credited with two or more in 2:30, with a total of 281 performes. Of these 129 mares 17 are pacing-bred, with 37 performers, or a percentage of 13 1-6, both in number of mares and in produce. Of the other 112 mares there are 9 with 19 performers, whose breeding has never been traced, leaving it about 14⅛ per cent. both mares and performers of the pacers. Pilot Jr., leads with nine mares who have 20 performers in 2:30, as follows: Crop — Blanche Amory, 2:26; Code, 2:22¼. Dahlia — Dacia, 2:29½; Daireen, 2:27¼. Diana — Geo. A. Ayer, 2:30; Lady Kelso, 2:29. Midnight — Jay-Eye-See, 2:10; Noontide, 2:20½. Minerva — Meander, 2:26½; Nugget, 2:26¾. Miss Russell — Cora Belmont, 2:24½; Maud S., 2:08¾. Santa Maria — Billy Hoskins, 2:26¼; Hylas, 2:24½. Tackey (2:26;) — Naiad Queen, 2:21¼; Pilot Boy, 2:29½. Waterwitch — Mambrino Gift, 2:20; Scotland, 2:22½; Vicking, 2:20½.

Handley's Hiatoga comes next with the following: Belle Wilson — Gen. Grant, 2:21; Gen. Lee, 2:26½; Grand Duchess (2:26½;) — Galatea, 2:24¾; Mary Ann, 2:28½; Cohamet, 2:17½. Hiatoga Johnnie follows with Dolly Varden — Flora P., 2:24½; Lucy, 2:26¾. Hefflling's Hiatoga with Lady Jones — Kitty Patchen, 2:21¼; Billy Scott, 2:21¼. Capt. Walker with Mollie Walker — Harry Wilkes, 2:13½; Gen. Garfield, 2:21. Blue Bull with Bridget — Highland Maid, 2:29¼; Highland Mary, 2:26. St. Clair with May Flower — Manzanita, (4 years, 2:16;) Wild Flower, (2 years, 2:21;) Pacing Kate, (unknown.) — George A., 2:24½; Jim. 2:23½ Or, in other words, 8 pacing-bred horses have sired almost 15 per cent. of the mares that have 2 or more of their produce in the 2:30 class, with an average record of 2:23. A few more words on this subject.

The fastest mare, 2:08¾; the fastest gelding, 2:10; the fastest two-year-old, 2:21; the fastest four-year-old, 2:16; and the fastest mare, horse or gelding at present on the turf, all have pacing-bred dams. The mare with the two fastest performers is Midnight, by Pilot Jr., average record 2:15¼; the mare with the fastest three is Miss Russell, by Pilot Jr., average record 2:17⅓; and I could go on and give a great many 2:30 performers, whose dams are pacing bred, but this I deem sufficient to set the young breeder to investigating.

In studying this list the reader must not become impressed with the idea that all pacing-bred mares are suitable from which to breed trotting horses, for some pacing families, like some trotting families, do not possess the blood that gives them the action and stamina that is required in a fast trotter. Whereas, as is shown, a great many of the noted brood mares that have produced one or more 2:30 trotters were sired by pacing-bred stallions, yet they possessed good blood on their dams' side, either through the Thoroughbred or trotting blood lines. This must not be lost sight of, for a slow, sluggish pacer that is only of ordinary blood cannot prove valuable as a producer of speed, no more than a trotting horse of the same kind could. In horse breeding it is of as much importance that the mare should be perfect as that the stallion should be so. They should be as near perfection in form and action as it is possible to get them, and of good blood, sound in wind and limb, bold and spirited, but of a kind disposition. On no account breed from an old worn-out mare, nor an unsound one simply because she is fit for nothing else. This has caused many disappointments in trying to breed trotting horses. Many a person has a good mare that would likely prove a fortune to them if bred while young and full of vigor. But, they say, I can't spare her, or she is too good to

breed now; but just as soon as she is worn out by hard work, or becomes crippled, they want to get a colt from her before she dies. They breed her, and the offspring, if any is obtained, proves a failure, and they say breeding fast trotting horses is only chance. This kind of breeding has disappointed many a person and ruined the reputation of many a good horse. No mare is too good to breed from, any more than a stallion is too good to use; and I doubt if any of our readers ever saw that kind of a horse, if good results are expected. The better the sire or dam is individually, the better our chanches are that we will obtain a good colt, and if both sire and dam are possessed of equally good qualities our chances are doubled.

SPEED AN ESSENTIAL POINT.

In breeding trotting horses, it is the speed and not the horse that brings the fancy price. There are hundreds of horses in the country that are as fine looking, have as good dispositions, and are worth as much money as any of the fastest trotters, for ordinary purposes, yet they do not bring a tenth of the money, because they have not the necessary speed. If you are breeding for trotters, breed for the best, but try to combine the speed with size and beauty. For if you fail in getting the speed, the horse will sell well for other purposes.

The American people have a natural love of beauty, as well as speed, and the majority would rather have for road use high form, with good size, with a reasonable amount of speed, than the ungainly form, with a high rate of speed. The qualities of style, beauty, and vitality, will also commend the fillies or mares for the harem, and the young stallions for the stud. This is becoming more noticeable every day. The people who go out every pleasant day for recreation, are rapidly substituting the handsome,

symmetrical horse of good size, for the smaller or plainer one. The horse that is to supply this demand must be the well-bred trotting horse, bred for size, speed, and beauty. He then has the instinct to trot, and the best ones of this breeding are as liable to go to the front as a more homely or smaller one. Whereas the breeding of trotting horses is now only begun, the breeders should try to avoid defective formation, and try to combine the speed with a larger and more symmetrical form. If they do this the disasters and failures will not be so numerous in the future as they have been in the past.

A STANDARD-BRED TROTTER.

According to the rules, a standard-bred trotter is one that has a record of 2:30, or better, provided any of his get has a record of 2:40 or better, or provided his sire or his dam, his grandsire or his grandam, is already a standard animal;

Or any horse that is the sire of two animals with a record of 2:30 or better;

Or any horse that is the sire of one animal with a record of 2:30 or better provided he has either of the following additional qualifiaations: (*A*). A record himself of 2:40 or better. (*B*). Is the sire of two other animals with a record of 2:40 or better. (*C*). Has a sire or dam, grandsire or granddam, that is already a standard amimal.

What is termed a standard horse, is one whose breeding does not trace to a standard sire or dam, but has a record of 2:30 or better, or has produced a colt with a record of 2:30 or better.

Mares or geldings entitled to registration are:

First, those that have a record of 2:30 or better.

Second, any mare that has produced an animal with a record of 2:30 or better.

Third, the progeny of a standard horse when out of a standard mare.

Fourth, the progeny of a standard horse out of a mare by a standard horse.

Fifth, the progeny of a standard horse when out of a mare whose dam is a standard mare.

Sixth, any mare that has a record of 2:40 or better, and whose sire or dam, grandsire or grandam, is a standard animal.

Seventh, a record to wagon of 2:35 or better shall be regarded as equal to a 2:30 record.

Fast horses never come by accident, but inherit their speed from their ancestors, and the more capable they are of transmitting great speed, combined with other good qualities as color, size, beauty, and disposition, the more valuable are they as breeders. This particularly carries its lesson to young, or inexperienced breeders, and others who are looking for some lucky accidental wonder. Expected accidents do not happen, and would not be accidents if they did. But it is the famous blood lines coming together, through sire and dam for generations, that produce great and fast horses. Therefore, in order to raise a trotting horse, use a standard bred trotting stallion, and also a standard mare if possible.

POPULAR SIRES OF TROTTERS.

As it may be interesting as well as profitable to the readers of this book, I will give the names, description and breeding of horses that have sired ten or more 2:30 trotters, with the number they have in the 2:30, 2:25 and 2:20 list.

I will commence with Blue Bull, who was without doubt one of the marvels of the age in siring speed, and who stands pre-eminently at the head of the list of all stallions as the sire of 2:30 trotters, of which he has fifty-six, twenty of which are in the 2:25 class, and

three in the 2:20 class. He was fifteen years in the stud, served 1,380 mares, and got 900 living colts. He began his stud career as a teaser for a jack, and died the king of sires, judging by the number of his get in the 2:30 list. He was a sorrel horse, 15¼ hands, foaled in Kentucky, in 1858. As to his sire, as well as his dam, there is some doubt. He is credited to Old Sam, as well as Pruden's Blue Bull, by Merring's Blue Bull, the sire of many fast pacers. First dam said to be by young Selim. Old Sam and Pruden's Blue Bull as well as Blue Bull, were fast pacers. (Dead.)

Blue Bull stands at the head of all pacing-bred sires, when the actual test of speed is made, and, as mentioned above, he has eclipsed all trotting-bred sires in the production of 2:30 trotters. This is simply marvelous so far as scientific breeding is concerned. But he and Old Pilot possessed such a strong infusion of speed producing blood, that they were capable of transmitting it to their descendents, though crossed with all kinds of mares. This was particularly so with Blue Bull, who fought his way to the front through all kinds of obstructions, by the performances of his get.

George Wilkes, brown horse, 15¼ hands, by Rysdyk's Hambletonian, dam Dolly Spanker, by Henry Clay, (dead,) comes next with thirty-five in the 2:30 list, twenty-five in the 2:25 list, and ten in the 2:20 list. He is also the sire of the dams of five 2:30 horses, which now places him first as a trotting sire, judged by the speed of his get; wherein he lacks one of having as many 2:30 representatives as Blue Bull; yet his get are much faster, and more highly prized, some of his entire sons selling from $18,000 to $35,000 each, which shows that men of experience and money adhere to scientific breeding.

Rysdyk's Hambletonian, bay horse, 15¾ hands, by Abdallah, by Mambrino, by imported Messenger, dam

by imported Bellfounder (dead), comes next as a sire of 2:30 trotters, having forty in the 2:30 list, fifteen in the 2:25, and two in the 2:20 list. But Hambletonian's ability of transmitting to his descendants, running through successive generations, the ability to reproduce trotters, capable of the very best performances, is unexcelled. In fact, Rysdyk's Hambleton may well be claimed the king of trotting producing stallions. He has sired forty that have trotted in 2:30 or better. He has ninety-six sons that have sired 421 that are in the 2:30 list, and ninety-five grandsons that have 224 in the 2:30 list, and forty-nine great grandsons that have produced ninety-seven in the 2:30 list, and the dams who have produced thirty-six in the 2:30 list.

Almont, bay horse, 15¾ hands high, by Alexander's Abdallah, by Rysdyk's Hambletonian, dam by Mambrino Chief, second dam by Pilot Jr. This richly bred horse is the sire of twenty-nine in the 2:30 list, thirteen of which are in the 2:25 list, and five in the 2:20 list.

Volunteer, bay horse, 15¾ hands, foaled in 1854, by Rysdyk's Hambletonian, dam Lady Patriot, by Young Patriot, of Diomede and Messenger descent, ranks fifth in the list of great trotting sires, judged by the number of his get in the 2:30 list, of which he has twenty-six, while he has fifteen in the 2:25 list, and five in the 2:20 list. But judged by the quality of his sons and daughters, as shown by the total number of heats won by them in 2:30 or better, he has eclipsed all other stallions, except, perhaps, George Wilkes, as his get has won 678 heats in 2:30 or better, an average of twenty-six heats each. Their average record is 2:23⅓.

Aberdeen, bay horse, 15¾ hands, by Rysdyk's Hambletonian, dam Widow Machree, by Seeley's American Star, has thirteen in the 2:30 list, seven in the 2:25 list, and three in the 2:20 list.

Belmont, bay horse, 16 hands high, by Alexander's Abdallah, by Rysdyk's Hambletonian, dam by Bellfounder, has seventeen in the 2:30 list, six in the 2:25 list, and two in the 2:20 list.

Green's Bashaw, black horse, 15½ hands, by Veranl's Blackhawk, by Long Island Blackhawk, dam, Belle, by Tom Thumb; second dam, the dam of Rysdyk's Hambletonian, has fourteen in the 2:30 list, seven in the 2:25 list, and one in the 2:20 list.

Governor Sprague, 2:20½, black horse, 16 hands high; by Rhode Island, son of Whitehall, dam, Belle Bradson, by Rysdyk's Hambletonian; second dam Jennie, by Young Bacchus (dead), has eleven in the 2:30 class, five in the 2:25 class, and one of 2:18.

Princess, by Woodford Mambrino, dam, Primrose, by Alexander's Abdallah; second dam, Black Nose, by Tom Teemer, has fourteen in the 2:30 list.

Electioneer, bay horse, 15¾ hands, by Rysdyk's Hambletonian, dam Green Mountain Maid, by Sayer's Henry Clay. This great sire has eleven in the 2:30 list, eight in the 2:25 list, andt wo in the 2:20 list. He was the sire of Hindo Rose, a horse which had the fastest record for a colt one or three years old; also Wildflower, which had the best two-year-old record as a filly; and Fred Crocker, the noted two-year-old stallion, and of Albert W., a horse with the best four-year-old stallion record. This places him as a great sire of colts of early maturity.

Daniel Lambert, chestnut horse, 15½ hands, by Ethen Allen, by Hill's Blackhawk, dam by Fanny Cook, by Treadwell's Abdallah. This great sire has twenty-five trotters in the 2:30 list, eleven of which are in the 2:25 list, and one in the 2:20 list, which places him sixth in the list of great sires of trotters, judged by their 2:30 representatives.

Dictator, brown horse, 15½ hands, by Rysdyk's Hambletonian, dam, by Seely's American Star, has only ten representatives in the 2:30 list, six of which are in the 2:25 list, and four in the 2:20 list, but this places him as one of the most popular horses of America as a sire of fast horses, being the sire of Jay-Eye-See, 2:10; and Phallas, 2:13¾, which is one of the fastest trotting stallions in America, if not the fastest.

Edward Everett, bay horse, by Rysdyk's Hambletonian, dam, Fanny, by imported Margrave, has eleven in the 2:30 list, nine of which are in the 2:25 list, and one in the 2:20 list.

General Knox, brown horse, 15¾ hands, by Vermont Hero, by Sherman's Blackhawk, dam by Searcher, has eleven in the 2:30 list, five in the 2:25 list and two in the 2:20 list.

Whipple's Hambletonian, chestnut horse, 16 hands, by Guy Miller, by Rysdyk's Hambletonian, dam, Martha Washington, by Washington of Messenger descent, has ten or more in the 2:30 list, three in the 2:25 list, and one of 2:19.

Wood's Hambletonian, roan horse, 15½ hands, by Alexander's Abdallah, has ten in the 2:30 list, and six in the 2:25 list.

Happy Medium, bay horse, 15¾ hands, by Rysdyk's Hambletonian, dam, Princess, by Aandrus' Hambletonian, by Bishop's Hambletonian, by imported Messenger, has twenty-two in the 2:30 list, ten in the 2:25 list, and two in the 2:20 list.

Stratmore, bay horse, 16 hands, by Rysdyk's Hambletonian, dam, Lady Waltermire, by North American; second dam by Harris' Hambletonian, has sixteen in the 2:30 list, seven in the 2:25 list, and two in the 2:20 list.

Woodford Mambrino, bay horse, 15¾ hands, by Mambrino Chief, dam, Woodbine, by Woodford (Thor-

oughbred), has ten in the 2:30 list, four in the 2:25 list, and one in the 2:20 list.

Young Columbus, bay horse, 15¾ hands, by Old Columbus, dam, Black Maria, by Harris' Hambletonian, by Bishop's Hambletonian, has eleven in the 2:30 list, and three in the 2:25 list.

Mambrino Patchen (brother to Lady Thorn, 2:18¼), black horse, 16 hands, by Mambrino Chief, dam, by Gano, by American Eclipse, has twelve in the 2:30 list, and three in the 2:25 list.

Tempest Jr. chestnut horse, by Tempest, by Red bird, has ten pacers in the 2:30 list, five in the 2:25 list, and three in the 2:30 list.

Unless I have overlooked the list, these twenty-six stallions are all the sires that have ten or more 2:30 representatives, of which seventeen belong to the Hambletonian family, four to the Morgan, three to the Mambrino Chiefs', and two to the pacing element. If of course is subject to a change at any time, as some of the stallions herein named may obtain other 2:30 representatives, and other stallions may enter the list, as some of them are close up to it now. But this list will suffice to show how stallions should be bred to produce fast trotting colts. Following this list I will give the breeding of the noted brood mares, which will show what blood lines should be united to produce the best results.

NOTED BROOD MARES.

Green Mountain Maid is considered the most famous speed-producing mare that ever lived. She never had a foal that could not beat 2:30. Seven of her foals sold from Stony Ford for $46,330, and seven of her sons and daughters are still at this famous home of trotters. She was sired by Harry Clay, still living, and her dam was Shanghai Mary, a mare of

unknown blood, but thought to be a Thoroughbred. She is the dam of the great Electioneer.

Miss Russel, by Pilot, Jr., by Old Pilot, was the dam of three colts with records better than 2:25; including the famous Maud S, 2:08¾; Nutwood, 2:18¾; and Belmont, 2:24½.

Midnight, by Pilot, Jr., was the dam of Jay-Eye-See, 2:10; and Noontide 2:20¼.

Dolly, by Mambrino Chief, has three sons in the 2:30 list. Director 2:17; Thorndale, 2:22¼; and Onward, 2:25¼.

The dams of Maxy Cobb, 2:13⅓; and Phallas, 2:13¾; the two fastest trotting stallions known, were by Clark Chief, by Mambrino Chief, while the dam of the famous Goldsmith Maid, 2:14, was by Old Abdallah.

THE GREAT BROOD MARE FAMILIES.

The influence of the dam in the breeding of trotters has of late years been a subject to which those interested in the production of fast and enduring trotters have given earnest and intelligent attention, and so rapid has been the advance in this branch of the breeding problem, that already there are certain strains of blood which experience has proved will not "nick," while the union of others has produced the results aimed at with such uniformity that when the lines are commingled the product is almost certain to be a trotter of merit. Year by year the breeding of the horses that perform successfully on the trotting track is becoming better known, and in these days when an animal enters the 2:30 list his pedigree is at once demanded and given to the public. Formerly it was esteemed sufficient for all practical purposes, that the sire alone of a 2:30 trotter be given, but now the lines are extended back on both sides of the house as far as they may be, and one result of this practice is

that the time is not far distant when the term "thoroughbred trotter" will have a meaning, and we can trace the breeding of our turf performers through five generations of trotting blood.

And now that the records of the season of 1885 have been completed, it is possible to show what families have produced the greatest number of successful brood-mares—that is, mares that have foaled one or more trotters with records of 2:30 or better. The result of a rather exhaustive and careful investigation which the Breeders' Gazette has made of this matter is given herewith, and is worth consideration. Eleven families being treated of, and as this list contains practically all the mares by any one stallion that have produced six or more trotters in the 2:30 list, it may be fairly considered as treating the subject in about as comprehensive a manner as is possible. These eleven families, given in order of merit, are as follows, the name of the stallion being given in each case, and the number of 2:30 trotters produced by his daughters:

Seely's American Star	35
Pilot Jr.	20
Rysdyk's Hambletonian	18
Mambrino Chief	16
Alexander's Abdallah	16
Mambrino Patchen	13
Sayre's Hatry Clay	12
Ethan Allen	8
Henry Clay	8
Capt. Walker	6
American Clay	6

That the daughters of Seely's American Star should take such a commanding lead at this day over all competitors is astonishing; and it is probable that in spite of the care exercised, there are some trotters whose dams are said to be by American Star that have no good title to the place they occupy, but even with these omitted he would still stand far in advance of all

other stallions as a sire of brood mares. And in the case of American Star, as well as other horses in the list, the fact that it was with horses of the Hambletonian family that the greatest successes were attained, should not be lost sight of. There has been a great deal of nonsensical talk lately about the advisability of using mares with a strong infusion of Thoroughblood in their veins when the result sought is the production of trotters, and in this connection the tabular statements given above will prove of interest. With the exception of Seely's American Star, all the horses whose daughters have gained prominence in the breeding ranks have for their near and most powerful crosses only trotting blood, and within the past two years it has been pretty conclusively demonstrated that Seeley's American Star was not even the three-quarters Thoroughbred that he was formerly claimed to be. But even where there is a close strain of running blood it will be seen that it has been overcome by the greater potency of the trotting sires to which the mares were bred. Of the thirty-five 2:30 trotters from daughters of Seely's American Star, we find that fifteen were sired by Rysdyk's Hambletonian, eleven by his sons, two by his grandsons, and others by such trotting-bred stallions as Ethan Allen, Jupiter (son of Long Island Black Hawk,) Idol and Andrew Jackson Jr. In the case of the Pilot Jr. mares there is a direct mixture of trotting and pacing blood, and as the two gaits which these terms represent are interchangeable, it is natural that from their combination should come the fastest trotters in the world — Maud S. and Jay-Eye-See; and it is also true that the best trotters out of Pilot Jr. mares are by direct male descendants of Rysdyk's Hambletonian; Maud S. and Jay-Eye-See being by his Sons Harold and Dictator, and Nutwood by his grandson Belmont, the three mentioned be-

ing the only ones out of Pilot Jr. mares that have beaten 2:20. The Mambrino Chief blood also nicked well with that of Pilot Jr., Mambrino Gift, the first stallion to trot in 2:20, being by Mambrino Pilot, son of Mambrino Chief, and it should also be noted that the dam of this successful sire, two of whose entire sons have trotted in 2:20 or better, was by Pilot Jr., so that in Mambrino Gift there was a double infusion of the Pilot Jr. blood. Woodford Mambrino got a pair of 2:30 trotters from Pilot Jr. mares; Wedgewood, a trotting son of Belmont, got another; Gov. Sprague, also a trotter, was successful at the first time of asking, getting Dixie Sprague (2:25¼) from the old-time trotting mare Dixie. Dictator produced Code, and Clark Chief got Blanche Amory (2:26). Even the thoroughbred stallion Bonnie Scotland got a trotter when bred to Waterwitch; Scotland (2:22½) being the result, but he was a lunatic sort of a trotter that always wanted to run when that gait would not win the money. But when Waterwitch received the embrace of the trotting stallion Mambrino Pilot she threw a faster trotter than Scotland and a far more level-headed one; and, more than that, Mambrino Gift, in spite of his early death, has proven himself a sire of trotters.

It is only a few years ago that it was claimed that the daughters of Rysdyk's Hambletonian were not proving a success in the breeding ranks. Gov. Sprague and Bateman being at that time about the only trotters out of Hambletonian mares to be found in the 2:30 list. But of late the accessions to the list have been made rapidly, until now there are eighteen 2:30 trotters whose dams were sired by Rysdyk's Hambletonian, among them being such clinkers as Trinket, Duquesne and Gov. Sprague. Some of these trotters out of Hambletonian mares are inbred, instances of this kind being Amy, 2:20¼, by Volunteer; King

Philip 2:21, by Jay Gould; Day Dream, 2:21¾, by Cuyler; Black Prince, 2;25¼, by Wilkins Micawber, and Fleet Medium, by Happy Medium. When we come to the Mambrino Chief mares, they having been the dams or sixteen 2:30 trotters, we again find that a large majority of them were successful only when bred to Hambletonian or his sons. Dolly, the most famous daughter of Mambrino Chief in the breeding ranks, has three sons in the 2:30 list — Director, 2:17, Thorndale, 2:22¼, and Onward, 2:25¼. All three are by sons of Hambletonian, their sires being Dictator, Alexander's Abdallah and George Wilkes, and every one of these stallions was a natural trotter. Of the other thirteen 2:30 trotters whose dams were by Mambrino Chief, one is by Rysdyk's Hambletonian, three by sons of his and two by a grandson, the others being without exception, by trotting-bred sires.

This is a wonderful showing, but nothing more than might reasonably be looked for. Mambrino Chief mares, American Star mares, Hambletonian mares and Pilot Jr. mares were bred by the score and by the hundred, but when, after the lapse of years, the results are examined, it was found that the ones which produced trotters were those bred to stallions that came from trotting families, and of course the leading trotting families make the best showing. The other tables tell the same story. The Mambrino Patchen mares, that are coming to the front with wonderful rapidity as the dams of 2:30 trotters, have now contributed thirteen to the list. Six of these are by George Wilkes, son of Rysdyk's Hambletonian; one by Alcyone, son of George Wilkes; and one each by Cuyler, Menelaus and Strathmore, sons of Rysdyk's Hambletonian. How the other two are bred on the side of their sires, we do not know. Daughters of Sayre's Harry Clay have produced twelve 2:30 horses. Two of these are by Rys-

dky's Hambletonian, nine by two of his sons, Volunteer and Messenger Duroc, and one by a grandson, J. R. Reese.

To sum the matter up concisely, we find that of the one hundred and fifty-seven trotters whose names are given in the appended tables nineteen were sired by Rysdyk's Hambletonian, fifty-six by his sons, and seventeen by his gandsons, a total of ninety-two or nearly two-thirds of the entire list.

Since this was written, in 1885, there have been some changes in the number of 2:30 representasives credited to these stallions. For instance, with Rysdyk's Hambletonian, who now has thirty-six instead of eighteen; and some of the others have also made gains, which I am not able to correctly give, but this will suffice to show to what trotting families the best brood mares belong.

Following this I will give the names of all horses with records of 2:14 or less, trotting or pacing, one mile in harness; also the fastest records, trotting or pacing, all distances, and all ways going. To give the records of horses with records slower than 2:14 would comprise a large list, and as it is the families that possess the greatest amount of speed we wish to know, this list will be sufficient.

RECORDS OF 2:14 OR LESS, TROTTING IN HARNESS.

Time, 2:08¾. Maud S., sorrel mare, 15¾ hands, Queen of the turf and Empress of all the trotters, was foaled in Kentucky in 1875. Sire, Harold, by Rysdyk's Hambletonian; dam, Miss Russel, by Pilot, Jr., by Old Pilot. At Lexington, Kentucky, Nov. 11, 1884, she trotted in 2:09¾, and afterwards lowered it as above.

Time, 2:10. Jay-Eye-See, black gelding, 14¾ hands. This celebrated gelding, which ranks next to Maud S., with a record only one and a quarter seconds slower, was foaled in Kentucky in 1878. Sire, Dictator, by

Rysdyk's Hambletonian; dam, Midnight, by Pilot, Jr. At Chicago, Illinois, July, 1884.

Time, 2:11¼. St. Julian, bay gelding, 16½ hands, foaled in New York in 1870. Sire, Volunteer, by Rysdyk's Hambletonian; dam, by Sayer's Henry Clay. At Hartford, Connecticut, August 28, 1880.

Time, 2:13¼. Rarus, bay gelding 16 hands, foaled in New York in 1869. Sire, Conkling's Abdallah, by Old Abdallah; dam, by Telegraph. At Buffalo, New York, August 3, 1878.

Time, 2:13¼. Maxy Cobb, bay stallion, 15½ hands, foaled in Kentucky in 1877. Sire, Happy Medium, by Rysdyk's Hambletonian; dam, Lady Jenkins, by Clark Chief, by Mambrino Chief. At Providence, Rhode Island, September 30, 1884. This is the best stallion record.

Time, 2:13¾. Phallas, bay stallion, 15¾ hands, foaled in Kentucky in 1877. Sire, Dictator, by Rysdyk's Hambletonian; dam, Betsey Trotwood, by Clark Chief, by Mambrino Chief. At Chicago, Illinois, July, 1884.

Time, 2:14. Goldsmith Maid, bay mare, 15¼ hands, for many years the Queen of the turf and Empress of all the trotters, was foaled in New York in 1857 Sire, Alexander's Abdallah, dam, by Old Abdallah. Alexander's Abdallah, by Rysdyk's Hambletonian; dam, by Bay Roman. Although Maud S. stands at the head of the list of trotters, yet seven horses have trotted more heats in 2:20 or better than the Queen, for she has trotted but twenty-eight heats under the time mentioned, while Goldsmith Maid has 114 heats to her credit in that time, and during her time on the turf she won 122 races, which, more than likely, will not be equaled soon. Harry Wilkes has seventy-nine heats to his creedit in 2:20 or better, Rarus 67, Hopeful 59, St. Julien 43, Jay-Eye-See 29 and Trinket 29.

There are fifty-eight horses that have five heats or more to their credit in 2:20 or better. Commenting on a table of trotters that have won twenty-five or more races, Griffin, of the "Turf, Field and Farm," says: "No doubt 25,000 horses have participated in trotting races in this country, and yet only 104 have succeeded in winning the apparently not very large number of twenty-five races. Goldsmith Maid, who heads the list with 122 victories, was a phenomenon probably for all time, and had exceptional advantages, as a large proportion of her races were against time, and she reigned supreme for so many years. In the latter respect Maud S. bids fair to surpass her, but the present Queen of the turf does not reach the list at all, having been owned by Messrs. Vanderbilt and Bonner since she assumed the throne, who did not care to trot her beyond what was necessary to maintain her supremacy. It does not seem likely that the record of Goldsmith Maid as a winner of races will ever be surpassed. Competition increases yearly, and it becomes more and more difficult to get first to the wire in three heats. Considerably more than one-half of the best records of the performers who reached the tables were made prior to 1880. Had the line been drawn at fifty or more, only eleven horses would have entered the table, viz: Dick Wright, 50; American Girl, 52; Hopeful, 55; Joe Ripley, 55; Phyllis, 57; Blue Belle, 61; Driver, 62; Rarus, 63; Lady Suffolk. 84; Flora Temple, 97; and Goldsmith Maid, 122. All of these but Deck Wright and Driver are dead to the American turf, and as I scan the whole list it seems to me most likely that at least eighty of the 104, for one reason or another, will never score again for the word in this country. Many are dead, many more are superannuated, several have gone to

Europe and a number of others are retired, probably permanently, for road uses."

PACERS WITH RECORDS OF 2:14 OR LESS, ONE MILE IN HARNESS.

Time, 2:06¼. Johnson, bay gelding, 15¾ hands, foaled in Michigan in 1879. Sire, Joe Basset, by Billy Bashaw. At Chicago, Illinois, in 1884.

Time, 2:11¾. Little Brown Jug, brown gelding, at Chicago, Illinois, in 1881. Also the three fastest consecutive heats: 2:11¾, 2:11¾, 2:12½.

Time, 2:12¼ Sleepy Tom (Blind Tom), chestnut gelding. At Chicago, Illinois, in 1879. This horse was considered the pacing wonder, being stone blind, and one of the sensational pacers of those days. He was foaled in Ohio in 1867. Sire, Tom Rolf; dam, by Sam Hazard.

2:12½. Buffalo Girl, bay mare, Pittsburgh, Pennsylvania.

2:12½. Mattie Hunter, sorrel mare, Pittsburgh, Pennsylvania.

2:12½. Rich Ball, brown gelding, Pittsburgh, Pennsylvania.

2:13. Gem, bay mare, Cleveland, Ohio.

2:13. Rowdy Boy, black gelding, Rochester, N. Y.

2:13. Flora Bell, black mare, East Saganaw, Mich.

2:13¾. Fuller, bay gelding, Maysville, Kentucky.

2:13¾. Westmont, chestnut gelding, Chicago, Ill.

2:14. Billy S., bay gelding, Buffalo, N. Y.

2:14. Sorrel Dan, sorrel gelding, Saganaw, Mich.

2:14. Lucy, gray mare, Chicago, Ill.

2.14. Sweetzer, gray gelding, California.

FASTEST TROTTING AND PACING RECORDS — ALL DISTANCES AND ALL WAYS GOING.

One mile, by a yearling filly — Hinda Rose, San Francisco California, Nov. 14, 1881, 2:36¼.

One mile, by a yearling stallion — Nutbreaker, Lexington, Kentucky, Oct. 14, 1884, 2:42½.

One mile, by a two-year-old filly — Wildflower, San Francisco, Oct, 22, 1881, 2:21.

One mile, by a two-year-old stallion — Fred Crocker, San Francisco, Nov. 20, 1880, 2:25¼.

One mile, by a three-year-old filly — Hinda Rose, Lexington, Kentucky, Oct. 10, 1883, 2:19½.

One mile, by a three-year-old stallion — Steinway, Lexington, Kentucky August 28, 1879, 2:25¾.

One mile, by a four-year-old filly — Sallie Benton, San Francisco, Dec. 13, 1884, 2:17¾.

One mile, by a four-year-old stallion — Albert W., Oakland, California, Sept. 5, 1882, 2:22.

One mile, by a four-year-old gelding, Jay-Eye-See, Chicago, Illinois, September 23, 1882, 2:19.

One mile, by a five-year-old filly — Trinket, Dover, Delaware, Sept. 30, 1880, 2:19¼.

One mile, by a five-year-old stallion — Santa Claus, Sacramento, California, Sept. 11, 1879, 2:18.

One mile, by a five-year-old gelding — Jay-Eye-See, Providence, Rhode Island, Sept, 13, 1883, 2:10¾.

One mile, over a half-mile track — Rarus, Toledo, Ohio, July 20, 1878, 2:16.

Two miles — Monroe Chief, Lexington Kentucky, October 21, 1882, 4:46.

Three miles — Huntress, at Prospect Park, Long Island, Sept. 21, 1872, 7:21¼.

Four miles — Trustee, Union Course, Long Island, June 13, 1849, 11:06.

Five miles — Lady Mack, San Francisco, California, April 2, 1874, 13:00.

Ten miles — Controller, San Francisco, California, Nov. 23, 1878, 27:23¼.

Twenty miles — Captain McGowan, Boston, Massachusetts, Oct. 31, 1865, 58:25.

Fifty miles — Ariel, Albany, New York, May 5, 1846, 3 hours, 55 minutes and 40½ seconds.

One hundred miles — Conquerer, Centreville, Long Island, Nov. 12, 1853, 8 hours, 55 minutes and 53 seconds.

One hundred and one miles — Fanny Jenks, Albany, New York, May 5, 1845, 9 hours, 42 minutes and 57 seconds.

TROTTING TO WAGON.

One mile — Hopeful, Chicago, Illinois, Oct. 12, 1878, 2:16½.

One mile, drawing 1,000 pounds — Mountain Maid, Long Island, 1865, 3:42½.

Two miles — General Butler, Fashion Course, Long Island, June 18, 1863, 4:56¼, and Dexter, Fashion Course, Long Island, Oct. 27, 1865, 4:56¼.

Three miles — Prince, Union Course, Long Island, Sept. 15, 1857, 7:53½.

Five miles — Little Mac, Fashion Course, Long Island, Oct. 29, 1863, 13:43½.

Ten Miles — John Stuart, Boston, Massachusetts, June 30, 1868, 28:02¼.

Twenty miles —Controller, San Francisco, California, April 20, 1878, 58:57.

Fifty miles — Spangle, Union Course, Long Island, Oct. 15, 1855, 3 hours, 59 minutes, and 4 seconds.

TROTTING UNDER SADDLE.

One mile — Great Eastern, Fleetwood Park, New York, Sept. 22, 1871, 2:15¾.

Two miles — George M. Patchen, Fashion Course, Long Island, July 1, 1863, 4.56.

Three miles — Dutchman, Beacon Course, New Jersey, Aug. 1, 1839, 7:32½.

Four miles—Dutchman, Centreville Course, Long Island, May, 1836, 10:51.

TROTTING AND PACING, DOUBLE TEAMS.

One mile — Maxy Cobb and Neta Medium, New York, Nov. 13, 1884, 2:15¾.

Four in hand — W. J Gordon's team 2:40.

One hundred miles — Master Burk and Robin, 1834, 10 hours, 17 minutes and 22 seconds.

TROTTER WITH RUNNING MATE.

One mile — H. B. Winship and Gabe Case, Providence, Rhode Island, Aug. 1, 1884, 2:06.

Three miles — Ethan Allen and running mate, 1861, 7:03¾.

PACING IN HARNESS.

One mile — Johnston (gelding), Chicago, Oct. 3, 1884, 2:06¼.

One mile — Buffalo Girl, Pittsburgh, Pennsylvania, July 27, 1883, 2:12½.

One mile — Cohannet (stallion), Providence, Rhode Island, Sept. 9, 1884, 2:18¾.

Two miles — Defiance and Longfellow, Sacramento, California, Sept. 26, 1872, 4:47¾.

Three miles — James K. Polk, Centreville, Long Island, Sept. 13, 1847, 7:44.

Four miles — Longfellow, San Francisco, California, Dec. 31, 1869, 10:34½.

Five miles — Onward, San Francisco, California, Dec. 11, 1874, 12:54¾.

PACING UNDER SADDLE.

One mile — Billy Boice, Buffalo, New York, Aug. 1, 1868, 2:14½.

Two miles — James K. Polk, Philadelphia, Pennsylvania, June 20, 1850, 4:57¼.

Three miles — Oneida Chief, Beacon Course, New Jersey, Aug. 14, 1843, 7:44.

PACING TO WAGON.

One mile — Sweetzer, Chico, California, Nov. 21, 1878, 2:17¼.

One mile — Pocahontas, at Union Course, Long Island, June 21, 1855, drawing 265 lbs., 2:17½.

Two miles — Hero Centreville, Long Island, Oct. 17, 1855, 4:59.

PACING WITH RUNNING MATE.

Westmont, chestnut gelding, by Almont, dam by Cattrill Morgan, with running mate, paced a mile at Chicago, Illinois, Oct. 31, 1884, in 2:01¾. Minnie R., bay mare, at the same time in 2:03¾.

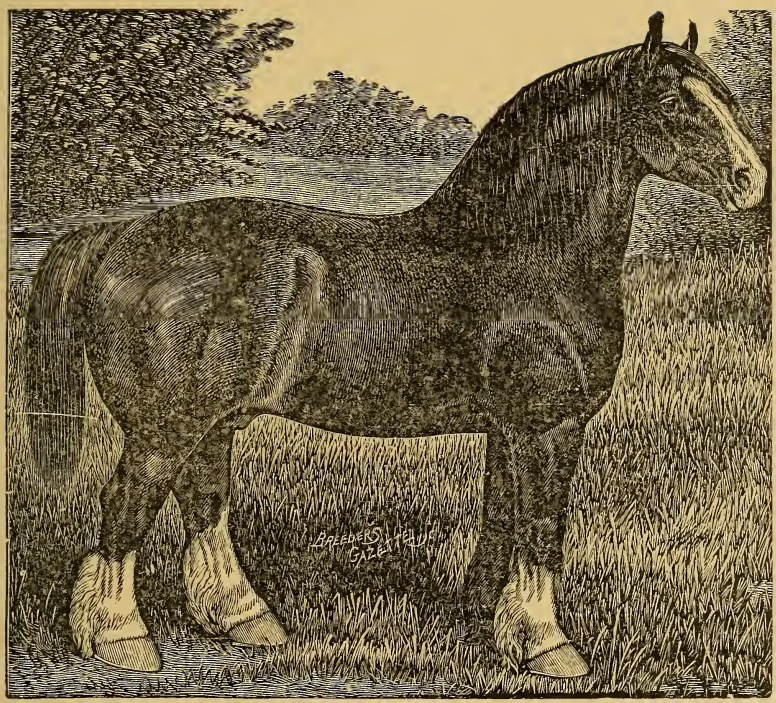
A writer who has been examining into the matter, finds that there are 1,900 or more trotters with records of 2:30 or better, 600 of which have records of 2:25 or better, 130 with records of 2:20 or better, 12 with records of 2:15 or better, and 2 with records of 2:10 or better. Of the horses in the 2:30 list 874 are geldings, 667 mares, and 371 stallions. Of these 989 are bays, 316 Chestnuts, 187 browns, 184 blacks, 165 Grays, 45 roans, 10 duns, 18 whites, 4 spotted, 1 blue, and 4 of unknown color. There are 385 pacing horses with records of 2:30 or better, 176 in 2:25 or better, 55 in 2:20 or better, 16 in 2:15 or better, and 1 in 2:10 or better. The sex is 255 geldings, 103 mares, and 27 stallions. In color they are bays, 167; chestnuts, 71; grays, 50; blacks, 32; browns, 30; roans, 26; duns, 8; spotted, 1; and 1 unknown color.

BREEDING DRAFT HORSES.

The breeding of draft horses in America of late years has become a very extensive business, and is one that the farmer, who has good, large mares, though only of ordinary blood, can safely invest in, for the breeding of such mares to purely bred draft horses cannot fail to produce profitable results at once, whereas to breed them to any other stallion, might prove a failure. The idea that a great many breeders have, that the breeding of draft horses will be overdone, and the market stocked so they cannot be sold,

is an error. The demand for good horses of any kind, and for draft and road horses especially, will always exceed the supply, and the sooner the idea that the breeding of draft horses will be overdone is abandoned the better, for the demand is all the time calling for more and better horses. There is no question but that the demand for good draft horses is much in excess of the supply, with prices relatively higher than for any other class of live stock to be found on the farm, except fine road horses, and still climbing higher; and yet there are men who are too penurious to pay a liberal fee for the service of a stallion which, crossed on even the commonest kind of a mare, insures a colt that will develop into a horse that will command a price which the true value of a scrub will never approach. Stud fees for trotting and running horses of known merit are getting higher every year, and it is a noticeable fact that the horses which command the highest fees have their books full first. This shows that the breeders of fast horses have learned that it does not pay to let a few dollars keep them in the ranks of second-class breeders, and expect second-class prices for their stock after it is bred and reared. The breeders of draft horses are beginning to awake to this fact also. The result is the same in both classes of breeding. True, there are no startling developments to be expected from heavy grades of horses as sometimes occur with trotters and runners to increase the prices of certain families or strains, but when the offspring of stallions that have been bred so that no bad blood can be found in their pedigrees sell for fifty or a hundred per cent. more money than the offspring of the mongrel, it should create enough sensation to attract the attention of breeders to investigate and find out in which direction the money lies. If all the farmers of this country who breed horses were to look

at this matter in the proper light, the best classes of draft stallions would soon have their books full also, and the valuation of the farm horses would be increased to an astonishing degree. The theory with some breeders, and especially the owners of draft horses, that the breeding of draft horses is a safer business, commanding surer profits than the breeding of road, coach and track horses, has caused a great growth of favoritism for mammoth horses, in some sections of the country, and the Norman, Clydesdale and others have added vastly to the wealth of the United States, and it would be well if more of them were introduced in most parts, but this idea, like others that are harped upon so much will not always hold good but must be governed by circumstances. The man who is breeding ordinary cold blooded farm horses or any other class of horses, on a hit or miss principle, who is not educated in the more modern art of breeding horses, and who is opposed to reading either books or papers upon the subject, could do better, and would certainly increase the earnings of his farm by the introduction of any pure draft blood, for when so doing he has taken a long step in advance. But the man who has standard trotting blood or approved families, and is engaged in breeding trotting horses, or may possess a few, or even one well bred trotting mare of good action, does not take a forward step when he introduces the draft blood upon such mares, for the average price paid for good track horses, of any age, broke or unbroke, is above the price paid for good draft horses, and the average price paid for well bred geldings or mares. For every "draft stallion that has been sold in the United States for $5,000, there has been five trotting stallions sold for $15,000," and as great a difference has been obtained for good brood mares. Again, the price obtained for the service of a good standard-bred



THE CLYDESDALE.

trotting stallion is always in advance of that obtained for a draft stallion. This has been one of the great drawbacks with the average farmer, who, slow to see, (or rather to admit,) and adopt the use of a well bred horse, at a reasonable price, plods along in the same old rut, breeding scrubs, or else breeds his valuable trotting mare to a draft horse or likely to a jack. Again the average farmer seems to think — or at least such has come under my observation very often, that they cannot raise a good trotting colt, for if they do, they must have it educated to the road, and track, and probably have it trained to trot, and that is expensive, where if they raise a draft colt or scrub, they can work it themselves, or sell it unbroke. Now that is only an idea. It is no more trouble, nor expense, to raise or break a trotting colt than it is a draft or any other colt, if properly conducted. But on account of being of good blood, they will not stand the abuse that a cold blooded colt will, and if not properly handled are harder to control. But once educated to do what you wish them to do, let that be what it will, either in work on the farm or road, they never forget it, and are always ready for whatever they are called upon to do, more willingly, more capable, and far more trusty than the cold blooded horse; and because a farmer may raise a good trotting colt, it is no reason that he should spend the worth of it with some professional trainer, unless desired. It will sell without track work for more than the average draft colt, and double that of the scrub at the same age; and my experience and observations are, if properly conducted, the average farmer can raise both draft and trotting colts, providing he has suitable mares, at a better profit than he can to confine himself to either one alone.

But as before mentioned, if one has only draft, or cold blooded mares, he will do better to confine him

self to draft horses, for less mistakes are made in breeding this class of horses than in breeding fast horses, and is less exciting, and not as apt to lead one astray. But even in breeding draft horses, good judgment must be exercised to obtain good results. The mistake that so many farmers make is, to first breed their mares to one breed of draft horses, and then if a fillie is obtained, breed her to some other breed. Such breeding can never produce as good results, as to select one breed and continue its use. The foreign ideas of horse breeding should teach us this, for that is the reason they have so much better draft horses than we. Each country confines itself principally to one breed, thus avoiding any cross. Nothing but approved stallions are used, and in this way they are able to improve their stock.

Inasmuch as the French were the founders of the Percheron breed and brought them up to their present excellence, their ideas on the subject are entitled to consideration. The breeders of Percherons are urged that while securing good mares—and the best stallions as a matter of course—not to overlook the equally essential point of having abundance of food, and of a good quality all the year round. In meadows where a medium sized animal will prosper, a larger built one will not succeed. The want of appropriate food will affect the gestation of the mare and later, the foal will not have adequate supply of milk to secure the basis of its desired stature and marketable bulk.

This is something that breeders of draft horses should bear in mind, that to obtain size in a draft horse, and especially at an early age, it requires a liberal allowance of food. The feed that would develop and bring a small horse to maturity, would be inadequate for the draft colt. It is on the same principle

as raising large or small breeds of cattle. Where a Devon or some other small breed of cattle would thrive and do well, the Short-horn or Hereford would scarcely live.

The advocates of pure Percheron Normans urge the rejection of all English as well as other blood, but practice selection among the best type of Percherons, to keep up the excellency of that race, but do not cross it with foreign blood. If you want vigor and vivacity rely on oats.

Attention is also being given to rear horses free from curbs — those hard tumors on the hocks or below the knees. If these excresences be due to an accident, a fall, or over-exercise, the matter is of secondary importance; if otherwise, they indicate a lymphatic and feeble constitution, and the mare so affected should be avoided. So ought too large or too small, or malformed hoofs.

WHY THEY RAISE GOOD HORSES.

"As shown from authentic reports, the French government expends annually upon its horse-breeding establishments no less than $1,348,600. The government of Austria gives something over $400,000, and that of Hungary $582,500 toward the encouragement of horse-breeding, but a large amount ($80,000) in Austria alone is spent on the purchase of promise-ing-looking young horses from private breeders for incorporation in the government establishments. The total asked for the purpose of improving the breed of horses in Austria alone is little short of $700,000 a year. In Prussia there are eighteen establishments, three of which consist of stallions and brood mares. The remaining fifteen are situated in the various provinces, and are depots for the stallions bred in these three studs referred to. The cost of the breeding establishments may be roughly estimated at $400,000."

PACERS AS SADDLE HORSES.

The impression prevails among those not familiar with the subject that any family of pacers are saddlers. This is a mistake. There is no animal of the equine race more abominable under the saddle than a scrub pacer, in whose ancestry, for a dozen years or more, nothing but cold blood can be found. A brute of this kind would require as much time and space to turn in as a cow, would stuble on a wax floor, and, if he failed to break his riders neck in this way, would jolt the life out of him in a rough pace. From this family of pacers no good can ever come until they are crossed with some blood that will give them action. But there is another class of pacers that stand pre-eminently above all other species of the horse kind; from their loins have come the kings and queens of the trotting and pacing turf, and the best saddle horses of the country. These show the clean limbs and supple action of the Thoroughbred blood that has nicked so kindly with their pacing ancestors. It is from stallions of this kind, with two, three, or four pacing crosses on top of a Thoroughbred foundation, that the best saddle horses will come when coupled with one-half or three-quarters Thoroughbred mares, so that the produce will have from 30 to 40 per cent. of Thoroughbred blood in it. It is generally conceded that a Thoroughbred can live longer and go farther under the saddle, with weight up in proportion to his size, than any other horse. Nature seems to have intended him especially for this purpose. But in breeding the saddle horse as described, man has improved upon nature, and secured not only a more serviceable animal, but one that will stand more constant riding. As a rule a Thoroughbred has no inclination to go any of the artificial gaits, and when forced out of a walk goes into a trot, and out of this into a gallop.

On the other hand a well-bred saddle horse will glide along five or seven miles an hour in a smooth, frictionless running-walk, without a jar to himself or rider; and at either of those gaits will go farther, with less fatigue to both horse and rider, than a Thoroughbred carrying the same weight and moving at the same speed in a trot. The Thoroughbred will last, and upon this line we rely for courage, activity, capacity and willingness to go. But he is not inclined to the saddle gaits, and takes them with an effort when compelled to. When, however, his blood is mixed with that of a well-bred pacer the produce has a natural disposition to saddle, in addition to the valuable qualities of the runner. For this reason it is necessary to unite the two lines of blood in one animal in order to get the best material that nature can give, and out of which a first-class saddle horse can be made.

"The memory of man extends to the day when the boys on the farm were proud to ride a fine young horse to church or to visit the fairer sex. They took pride in the colts, and taught them to move freely under the saddle, and above all, when the colt was broken he was taught to walk. Now the boys must have a fine buggy and harness, and the colt must show his style and speed all the time. The boy is in too great a hurry to allow the colt to walk. The colt, buggy, and boy, are soon a used up set by fast driving."

If we could return to the fashion of riding on horseback, we would save millions to the farmers, and the boys and girls would develop better forms and have better health. Any lazy lout can ride in a buggy, but to be a graceful rider on horseback, one must have some energy and get up in their nature. There is life and health in horseback riding. The whole system feels the invigorating effect of it. The rider and the horse catch the fire of sympathy and ex-

citement in the run or fast paces, and every nerve and muscle of the body is brought into healthful, invigorating play. The farmer will find it to his interest to raise a class of colts that the boys would like to ride. He can raise three or four fine saddle colts for what one buggy and harness will cost, and a fair saddle horse will always sell at a good price.

THE GENERAL PURPOSE HORSE.

The diversity of opinion among horsemen, upon this question, as how the general purpose horse should be bred is as great, probably, as upon any other one question in the art of breeding horses. Some breeders claim that the best general purpose horse, is one produced by a cross of a Thoroughbred or trotting stallion upon large cold blooded mares. Others claim right vice versa to this; while others claim that the only way to produce such a horse, is by the coupling of large trotting or pacing bred stallions, with mares of the same kind, or our large native mares. And if ever a general purpose class of horses are produced, one that can be relied upon as to their service, my opinion is that the last mentioned way is the best way, and the only way it will ever be done. That the general purpose horse should be composed of good blood, that will give him action and stamina as well as size, no intelligent breeder will dispute, for without this, how would anyone expect him to fill the numerous wants of man and serve him at home, on the farm, in the plow, or wagon, on the road, in the carriage, or under the saddle. A general purpose horse, like a general purpose cow, may be classed as a handy kind of animal, suited for a great many purposes, under divers circumstances; but his value as a selling animal, cannot be rated very highly, for as a general thing the class of people that want him are not willing to pay a fancy price for a horse. Those that have the color, action,

and style combined with size enough for carriage use, full 16 hands high or more, with fine finish, are the horses of this class, that bring the best prices. Any intelligent breeder of these days need not be reminded of the value of breeding for some special purpose. What we need is not more horses so much as better ones. "A hint to the wise is sufficient."

WHAT CONSTITUTES GOOD CARRIAGE HORSES.

This article, as written by Mr. D. H. Swiney, I consider, in most respects, worthy of attention, and will quote it, with a few changes.

"The one class of horses that is absorbing more attention at present (probably because a great many who talk so much about them have no knowledge of what they really are,) is the carriage, or more commonly called coach horses. First, let us consider what is a carriage horse and what is a coach horse. We have no use for what is really a coach horse in this country, except for business purposes, viz: For express companies' use, and wholesale stores to use in their heavy wagons," *omnibus and heavy delivery wagons of all kinds; or. on the farm.* "Therefore, where is the magnificent price going to come in? while a carriage horse is in every day use for pleasure, and the pleasure-loving people are bound to pay even an exorbitant price for a team of finely mated and really good carriage horses. Do not confound what I mean by a carriage horse with a fancy driver. They are different again, but nevertheless a first class carriage horse makes a pleasant and fine single driver, although a trifle larger than some people like. A coach horse is what we would call a toppy, stylish or rangey draft general purpose horse in this country, while a carriage horse is probably as tall, but in other respects is more like a fancy driver or trotter, with all the action of a trotter, the finish of a Thoroughbred, with the style of a peacock,

and with good horse sense. Because a horse is 16 hands or over in height, and weighs from 1,200 to 1,400 pounds, he is not a carriage horse. After studying these things over, and fully making up your mind what kind or class of horses you are aiming to breed, the next thing is how to breed them.

"I will give you the benefit of my experience and observation in regard to the class of horses I have been writing about. In order to breed these horses my experience and observation go far to confirm an opinion formed years ago, viz: That in order to breed the right kind of a horse for this purpose there must be an instinct to trot from one side or the other. My experience only runs on the side of the sire. In making public stands with our trotting-bred stallions we have had mares of nearly every description and breed, from the Texas pony to the Thoroughbred, and having our own opinion of breeding carriage horses have used a great deal of persuasion to get owners of good, rangey young draft mares of 16 hands high and over, and weighing from 1,250 to 1,500 pounds, to breed to our horses, and I must say I have never seen anything in the way of breeding any kind of stock that gave more satisfactory results. The produce had the required size, the fine finish, and the almost perfect knee action and gracefulness that is a necessity in the carriage horse. This leads me to assert that probably the most assured way is to use a good rangey and stylish grade draft mare for a brood mare, and couple her with a fine, well-bred, trotting horse that has a strong dash of Thoroughbred blood. There comes to memory the most successful cross of this kind I ever knew of, a large, growthy, but low-headed three-year-old filly, which was bred all one season to a draft horse with the hopes of raising a grade draft stallion, but she would not breed, and in a fit of desperation her owner

bred her to an undersized — at least in height — Hambletonian stallion that had for a dam a running-bred mare. She got with foal at a single service, and the result was the finest colt for carriage purposes I ever looked at. It had the agility of a kitten, the size of a light draft horse, with the smoothness and grace of a fawn, with the most perfect knee action I ever saw."

This cross would no doubt give satisfactory results, providing the grade draft mare had a good dash of hot blood in her, sufficient to give her stamina and knee action. But as the result of many years close observation I have learned that to breed the average grade draft mare to trotting stallions will certainly end in disappointment.

"My experience does not stop with this one instance nor the produce of this one stallion or family of trotting-bred horses when crossed in this way, and it works to a certainty instead of the exception.

"The reader will no doubt say and think that I am a trotting-horse man. Well, I will say I am proud to be able to plead guilty to the charge, as it is the only thing we have in the horse line worth being proud of that has been bred and brought so near perfection in America. They will also say I am prejudiced toward Cleveland Bay and French Coach horses. I try to tell the truth, and I must say that, while I love a good horse, and there are a good many Cleveland Bays and French horses that are good, I do not like to see people swindled by fraudulent practices used by a great many dealers in stallions. There are a great many of these horses that are fraudulent in pedigree and frauds individually. When they are shown to the halter they are fair to look at, but when hitched up, what a gait for a carriage horse! They have a low, scraping motion in front, as though trying to level the road, with as much grace of movement as a cow. There are also

quite a number of these horses that are as represented and are a benefit to the country in which they stand, *but will they*, when crossed on our cold blooded mares, produce the desired result to any certainty? I think not, for the following reasons: The carriage horse is used at a trotting gait alone, and it is the most important thing of all to have the knee action and the graceful stride only to be got by long inheritance, as bred in the American trotter. Have these horses got this to give their produce? Is it inbred to them? Have they got the warm blood necessary to lighten up our cold blooded mares? I do not believe they have. The Cleveland bay horse I have no doubt would sire the finest carriage horses in the world if crossed on the trotting-bred mares of America. While on the other hand the trotting horses of America have the trot as an instinct. It is the first gait struck by them. They are a warm blooded horse also, and where they have the Thoroughbred blood close up it gives the fine finish, and royal look so sought after by the buyers of this class of horses."

Size is more essential than the Thoroughbred cross. A standard trotting stallion possesses all the warm blood that is necessary. But he should be large and stylish, or a tried stallion that has proven himself the sire of large and stylish colts.

INTRODUCTION OF STALLIONS.

The fact that the cost of a first-class stallion amounts to a considerable sum, and often more than any one man has or cares to invest at one time, has prevented the introduction of such horses into neighborhoods where they might have a large patronage. This difficulty might be obviated by several farmers forming a company and purchasing a stallion. By so doing the cost would not fall so heavily upon one man, the cost of service might be made less to those inter-

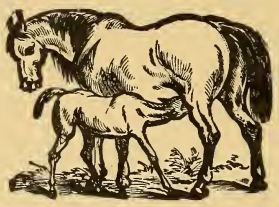
ested, and there would be more to work up a trade for him. An investment of this kind would certainly be safe, and would prove valuable to all concerned.

When a good breeding stallion is introduced into a neighborhood, all the breeders in that vicinity should patronize him, as by so doing it puts a great many good horses in that immediate section, and offers quite an inducement to buyers to come there to buy the colts, for if a farmer raises a good colt, more than likely he has another one, or his neighbor has, that will mate it, and very frequently this enhances the value of both. Very often a farmer can make the mating of a pair of horses very profitable. It is always well to pay attention to the color in mating a team for a fancy consideration; but size, disposition, strength and action are much more important when mating a team for general usefulness, and to make of it a pleasant team to drive and work.

The idea of introducing improved breeds of horses into a district should not be so much to supplant other breeds of known merit, as to supersede the scrubs and grades. Like everything else, the more competition of the right kind horse raising has, the better it is for it in the end. The man who owns a good stallion and tries to monopolize the business in his neighborhood by the exclusion of all other good stallions, certainly makes a grand mistake. The warfare should be against the class that is worth the least, and brings in the least money when placed upon the market.

Mark Comstock says: "Whoever wishes to breed a fine colt must be willing to put himself to a certain amount of trouble and expense. There is an old saying that 'the gods never drop nuts already cracked into men's mouths;' * * * now the country is full of men who are ambitious to raise a five-hundred-dollar colt, but who are at the same time unwilling to

be at any considerable trouble or expense to do it. They wish the five-hundred-dollar colt but they wish to get it in such a way that it shall not cost them over fifty or seventy-five dollars. * * * It is needless for me to say that such an expectation is futile. * * It is not difficult for an intelligent breeder to raise a five-hundred-dollar colt; it is not extravagant for such a person to expect to raise a colt, which, at five years of age, shall command a thousand dollars for every year of his age; but it costs time, attention and some money to insure such a result. An ordinary dam will not produce such a colt. An ordinary stallion will not beget such an animal. * * * Stallions whose services can be obtained for ten dollars or less, and mares of low blood and negative characters, can never beget or conceive such a foal. It is only by the combination of good blood that such results are obtained.



CHAPTER XX.

GENERAL INFORMATION UPON THE HORSE.

MANAGEMENT OF THE STALLION—HIS FEED AND CARE—HIS EDUCATION—WHEN MARES SHOULD BE TRIED—THE NUMBER OF MARES TO BE SERVED—EFFECT OF AGE OF THE SIRE UPON HIS GET—CARE OF BROOD MARES AND COLTS—RULES TO BE OBSERVED—WHEN TO CASTRATE COLTS—FEEDING, WATERING, AND GROOMING—SHOEING—STABLES.

MANAGEMENT OF THE STALLION.

IN speaking of the various subjects as to the general management of the horse, I shall endeavor to make it as brief as possible, and only give such information as I think may be of benefit to the mass of readers of this work.

Being an admirer of the horse, an extensive reader and close observer, with many years of experience as to their management, if the rules as herein given are closely observed, they will be of great benefit to the experienced as well as the inexperienced horsemen.

First, I will speak of the management of the stallion, which, if understood, is very often neglected by the owner and groom. His stable should be a box-stall not less than twelve feet square, well lined inside, with a box and manger snugly fit in one corner for the feed. The doors should be strong and securely fastened when closed, and when open two bars should be put across to insure safety in case the horse is not tied. The ceiling should be high, and the ventilators well up so as to prevent any strong draft of air upon

the horse. In a stall of this kind, the horse should have perfect freedom and not tied unless during the day. The stable should be cleaned once, or oftener, every day, and never allowed to become foul. This is something that should be observed in every stable, if you wish healthy horses. With a little teaching by holding a bucket for a horse to stale in, or putting some loose material under him, he can be learned to stale at regular intervals, and in one place; or by leading him out onto a manure pile, in one corner of his stall, or any other convenient place.

HIS FEED AND CARE.

The stallion's food should be mainly good, sound oats — nothing is better; but this should be varied by an occasional ration of corn or barley; for horses, like men, are fond of variety in their food, and an occasional change of diet is condusive to health. Wheat bran is an invaluable adjunct to the grain ration, and can never be dispensed with. It is the cheapest, safest, and best of all regulators for the bowels, and it is especially rich in some of the most important elements of nutrition. No specific directions as to the quantity of food can be given. Some horses will require nearly twice as much as others; and the quantity that may be safely given will depend somewhat upon the amount of exercise in any given case. Some horsemen recommend feeding three, and others five times a day; but in either case, no more should ever be given than will be promptly eaten up clean. If any food should be left in the box, it should be at once removed, and the quantity at the next time of feeding should be reduced accordingly. As a rule, it will be safe to feed as much as the horse will eat with apparent relish; and then with plenty of exercise, he will not become overloaded with fat. The hay, as well

as the grain that is fed, should be sound, and free from mould and dust.

The amount of exercise to be given will vary somewhat with the condition and habit of the horse. If he is thin in flesh, and it is thought best to fatten him up, the exercise should be lighter than it otherwise would be; and, on the other hand, if there is a tendency to become too fat, that may be corrected by increasing the amount of exercise that is given. The exercise given the horse should be such as will be expected of his colts. Draft horses should not be led or driven faster than a walk in taking their exercise (but this should be at a rapid and vigorous gait), and they will require a much less distance than the roadster or running horse, three miles a day generally being sufficient, while the roadster and running horse may safely have five miles, which should in some cases be increased to eight and even ten, at a much more rapid gait than the draft horse. The young stallion should have regular exercise, daily, never violent. If of trotting blood, he may be speeded for short distances. These short trials will improve his health and stamina. Care should be taken to develop the true trotting action, because he is expected to impress this upon his progeny. Strong habits are transmissible, and the proper training of the trotting sire is all-important. The draft stallion needs also judicious daily walking exercise when young. The muscular development is most important, and indolence may render the stallion unfit for service.

The point to be aimed at in the stable management of the stallion, is to so feed, groom, and exercise as to keep the horse to the very highest possible pitch of strength and vigor. The idea which prevails among many stable grooms that feeding this or that nostrum will increase the ability to get foals, is sheer nonsense.

Anything that adds to the health, strength, and vigor of the horse will increase his virility or sexual power, simply because the sexual organs will partake of the general tone of the system; and on the contrary, whatever tends to impair the health and vigor of the general system, will have a deleterous effect upon the sexual organs.

HIS EDUCATION.

While the temper and disposition of the stallion are largely matters of inheritance, yet much depends upon his education.

It is easier to spoil a horse than to cure him of bad habits when they are once formed. If there is any appearances of a disposition to be headstrong and unruly, he should never be led out except by a bridle that would enable the groom to exercise complete control over him.

It requires some skill and a good deal of patience to teach a stallion to behave himself properly when brought out to serve a mare. He should never be allowed to go on her with a rush; but should be led up on the near side of the mare, to within about ten feet of her, and made to stand with his head towards the mare, about opposite her head, and, when he is ready, he should be led toward her and made to commence the mount when at her side, instead of going a rod or so, with his fore feet sawing the air, as is often the case. By observing these directions, there will be but little danger of injury to the stallion by a kick from the mare when he is mounting, especially if a good man is at her head to prevent her from wheeling toward the horse when he approaches.

The danger to the horse is always the greatest when he is coming off, because many mares will kick then, that will stand perfectly still when he is mounting. To obviate this, it is always best for the groom who

holds the horse to seize the mare by the bit with his left hand at this moment, and bring her head around toward him by a sudden jerk as the horse is coming off. But in most cases, indeed all cases where there is not absolute certainty that the mare will stand perfectly quiet, the hobble should be used and then there can be no danger.

To make a cheap and handy hobble that will answer every purpose, take a three-quarter inch rope fifteen feet long, form a slip loop at one end, put this around the mare's left hind pasturn, bring it forward between her front legs, up over her neck, and down under the rope again. Now draw her leg up well under her, tighten up the rope, and hold the end with the right hand to keep it from slipping, while you hold the mare by the bit with the left hand. When you want to fasten both legs, take an inch rope of sufficient length to go around the neck and fasten the ends together securely to form a collar piece, then take two three-quarter inch ropes of sufficient length to reach from the hind feet to the collar piece, and with at least two feet to spare. Form the slip loops on the ends, put them around both hind pasturns, bring the ropes forward between the front legs up through the collar piece, and back through again; then hold the ends to keep them from slipping. These are the best hobbles that can be found, for they are perfectly secure in the hands of a good person, and if the mare becomes entangled she can soon be loosened by letting go of the ropes.

WHEN THE MARE SHOULD BE TRIED.

A point upon which there is great diversity of opinion is, when and how often a mare should be tried after she has been served by the stallion. A mare will almost invariably be "in season" on the eighth or ninth day after foaling, if she is healthy and has

received no injury in giving berth to her foal; and in most cases it is best that she should receive the horse at that time, if it is desired that she should be kept for breeding purposes. We can remember when it was the almost universal custom to try mares every week after they had been served, but that is not the present practice of many experienced horsemen. The rule now that receives the most general sanction, is, not to try the mare again after service before the lapse of fourteen days, then the eighteenth or twenty-second day after service, and then, if she refuses the horse, she should be tried every week for some four weeks; and then if she does not come in, within that time, it is reasonably certain that she is in foal. She ought to be closely watched, however, for some weeks afterwards, because in some cases mares will pass over a period of one or two months, or even longer, without any appearance of heat, and yet not be pregnant. Again there are other mares, and they are more numerous than one would suppose, that will appear to be in, and will freely receive the horse when they are in foal, and even up to almost the time of foaling. Such mares are always very annoying both to their owners and keepers of stallions.

Mares that are uncertain breeders should be bred early in the spring, and carefully watched during the summer. If a mare is not with colt she will usually come in season again from 14, 18 or 22 days, and mares that receive the horse when taken to him but fail to catch after repeated trials, should be examined and operated upon. By examination, very often with mares of that kind, the mouth of the womb will be found closed, and unless it is opened they will not get in foal. This is contrary to some theoretical writings that I have read, but according to practical results that I have tried in my years of practice in the busi-

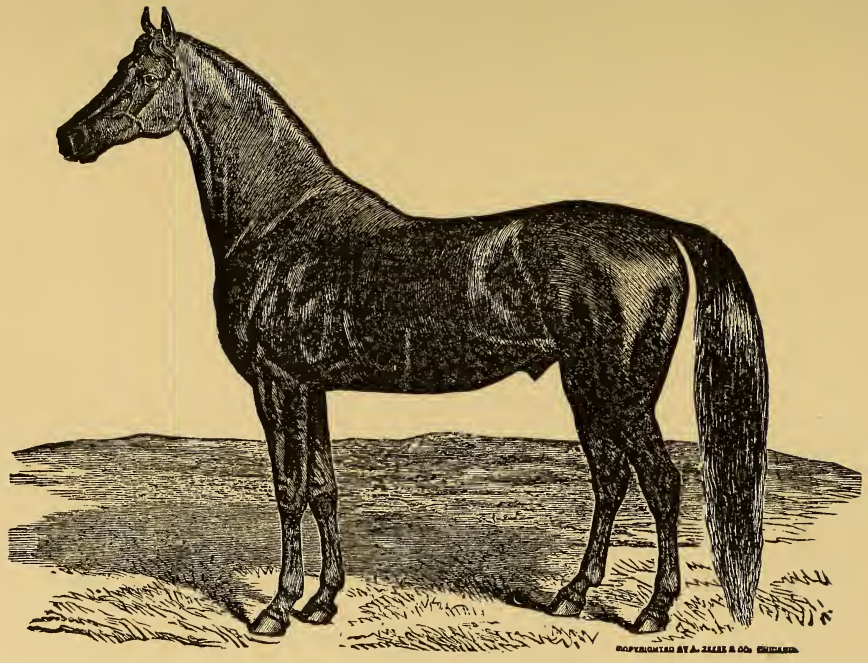
ness. This is not a very hard operation to perform, and not a dangerous one. The hand should be greased and the examination made with some caution, and if the womb is found closed proceed to open it by inserting first one, then two or more fingers until it has become so opened that the whole hand can be passed in and out of the womb with ease, when the horse should be allowed to serve her. Another practice used with mares of this kind is, not to let the horse try them before service, if they are known to be in season, but bring the horse out and allow him to mount at once; in this way she will be served before her amorous desires are aroused to so great an extent and thus will be more apt to become pregnant. Again, the practice of allowing two services only a few hours apart, or one in the evening and again in the morning, or *vice versa*, often proves successful, especially with young mares of nervous disposition. There are two other practices used by some horsemen, and which I have practiced with good results, upon uncertain and annoying mares. One is, when the mare is known to be in season, give her a good bran mash with two ounces of sweet spirits of niter in it, in the evening, and early in the morning allow the horse to serve her. The other is by bleeding freely either from neck or mouth. Both practices are calculated to relax the system, and reduce their amorous desires. Any of the methods given here can be practiced by any practical horseman, and will prove successful, and are valuable to those owning uncertain and annoying brood mares. For information upon bleeding horses see veterinary department.

THE NUMBER OF MARES TO BE SERVED.

The number of mares that a stallion may be permitted to serve during a season has long been a subject of discussion among horse breeders. It is generally

believed that the two-year-old stallion will be all the better off for not serving any mares at all; that a three-year-old should be limited to fifteen or twenty mares, and that a four-year-old should not go beyond twenty or thirty. It is very desirable, at the earliest possible stage in the life of a stallion, to ascertain what his qualities as a foal getter are likely to be, and with this object mainly in view I consider it wise to let the two-year-old serve a few choice mares, merely enough to show the character of his get. But these mares should be of the choicest kind, individually, or brood mares of noted character, for upon the stallion's first get depends his future value as a sire. Many valuable horses have had their reputations ruined by being allowed to serve a class of inferior mares when young. As a three-year-old, I should, with the same object in view, permit him to serve a larger number, which may thereafter be increased with each succeeding year until he is fully matured, when, if properly taken care of, with reference to food and exercise, eighty or one hundred mares may safely be served during the year, but this number in my opinion should never be exceeded.

With the young stallion that is to serve but a few mares, I would prefer that these should all be served within the space of a few weeks — say two or three a week until his limit for the season has been reached — and then let him be withdrawn entirely from the breeding stud. He will soon forget all about it, will cease to fret after mares, and will have nothing to do but to grow until the next season. But when it comes to doing business with the stallion, he should rarely be permitted to serve more than twice a day; and even this should not be kept up for any great length of time. One a day during the season is better; but the



AMERICAN TROTTING HORSE.

groom cannot always do just as his judgment dictates in this matter.

Another thing is that people suppose that they can compensate for a great deal of service by an enormous quantity of stimulating food or drugs, and no exercise. This is an error. Good, sound food, given regularly in the right quantity, with some grass or green burdock — nature's own remedy — plenty of moderate exercise and good grooming is the kind of treatment he wants to prove successful.

EFFECTS OF AGE UPON THE GET OF THE STALLION.

Another point upon which there has been much discussion is the effect which age has upon the quality and fertility of a stallion; and according to the information gathered from experienced breeders, it seems that the age of the stallion has nothing to do with his quality or fertility. Hence the conclusion is that in the number of mares served, so in the matter of age, the reproductive powers of the stallion appear to be almost entirely a matter of condition, and that age has no effect whatever upon the percentage of foals from a given number of services. There has also been much speculation as to the comparative value of foals got by a stallion at different periods of life. The statistics of the trotting horse furnish us with abundant evidence to prove that here, also the age of the sire has but little or no effect. If any difference is observable, it is in favor of the more aged stallion, generally those in the teens.

CARE OF BROOD MARES AND COLTS.

The next question to be considered is, how shall the mares be cared for while being bred, or while in their pregnant state? This I consider of as much importance as any other point in the art of breeding, for the following reasons:

First, upon the mare's condition when served depends largely as to whether she will become pregnant or not. For if in poor health when served, she is not so liable to become pregnant as if in good health and condition, but she should not be over fat. In the second place, it depends very much on their mental condition, when brought to the horse. If they have been rode or driven hard for a long distance, and are hot or excited, they are more liable to fail than if cool and quiet. Again, mares that have been used for a long time on the road, and kept on dry feed, are much harder to get with foal than those that have run out and received all kinds of food, and the same may be said of quite young mares, two and three years old, or quite aged mares, as they are always more annoying than those of middle age. Last, but not least, is the manner in which the mare is kept while in her pregnant state, for upon her health and condition, while in foal, depends the growth and vigor of the colt.

In speaking of breeding mares at two and three years of age, and as the question is often asked by new beginners, if mares can be bred without injury at so young an age as two years, I would say, it is only in certain cases, and not as a rule, that I consider it profitable to breed fillies at two years of age. First: they are very hard to get in foal and very annoying to both parties concerned. Second: unless the filly is very growthy and well developed at that age, there is danger of injury to her in foaling, especially if bred to a draft horse. Third: it impairs the growth to a more or less extent, and they will not develop into as smooth and large an animal as they would if not bred so young, which, of course, is a loss unless the owner expects to keep them for brood mares. Therefore, I would not advise the breeding of two-year-old fillies, unless they are large and growthy, or, where one has

grade draft fillies, and he wants to breed them, in order to grade up; or as some contend, to make them more reliable breeders. The latter I consider an error, and contend that eight-tenths of all fillies, regardless of breed, should not be bred until the spring they are coming three years old. Then it is best to breed them, especially if they are intended for breeding purposes, as it will more fully develop them and form the habits desired.

RULES TO BE OBSERVED.

First, be sure the mare is in good health when bred, and give her such care and feed afterward, as to keep her in good health, and a thriving condition. For this purpose there is nothing better than to turn her out in a good blue grass or timothy pasture, and let her run at leisure, or if in use, on the farm or road, with a reasonable amount of work, good feed, and care she will do just as well, and will thus pay her way. Her feed should consist of oats, mill-feed, and corn, and if possible a run at grass during the night, or when not in use, for by this means the digestive organs will be kept in a healthy condition.

Second, avoid heavy salting and clover pasture, especially in wet weather, salt should be given twice or three times a week, and in small quantities, or what is better, keep rock salt where she can get at it when wanted, or use soda in place of salt—a tablespoonful at a time. Clover pasture if used at all should be avoided in wet weather, as it is the cause of a great many mares failing to get in foal, or losing their colts when once pregnant. Again, avoid hard pulling, riding, or driving. The last four months of pregnancy, she should be fed liberally with a bone and milk producing food—good oats, mill-feed, oil-cake, corn, and hay that is free form dust. It is not so much the quantity of food that requires attention, as

the assurance that it is suitable. An abundance of inferior food may prove an injury, as well as too much good of the wrong kind. For instance clover hay, if fed in excess with other bulky food, or even alone, often causes mares to loose their colts, as it has a tendency to expand the stomach to such an extent as to cause them misery, and in straining to relieve themselves of this fullness, they slink their colts. It is very prudent also with brood mares to see that the water supplied them is good and not too cold; running water is best, next is well water, but this should be drawn in the summer a short time before drinking, as it then will be relieved of the excessive coldness and become somewhat aired, which is best. As to the care of brood mares, they should be used regularly at slow, light work, or else be turned out in a lot away from other horses during the day, and if in the winter or early spring, they should be provided with a box-stall sufficiently large and well secured to prevent accidents, to run in during nights and stormy days; but during warm weather there is no place better than a grass lot or field well fenced, and free from pools of water, or running streams, into which the colt may get and drown; for, it is a noticeable fact, that mares will often go to, or near water, when foaling. In a place of this kind, often several mares can be turned together without any danger. Mares treated in this way, rarely have any trouble at foaling time. But on account of the colt being born as it is, many times, with the head covered with the placential envelope, which will smother the colt in a few moments, if not removed, safety demands that they be watched by some person of good judgment, and capable of rendering assistance if needed. A little attention at the proper time would save the lives of many valuable colts. A mare usually goes about eleven months, but the time

varies considerably. By close attention, the time can be foretold quite accurately. A few days before foaling, there will be a perceptible shrinking of the muscles about the loin and back of the hips, the teats will fill out plump to the ends, and not infrequently there will be a discharge of milk from the udder. As soon as these symptoms occur, the mare should be closely watched, as the foal may then be expected at any time, whether it be more or less than the usual period of eleven months.

THEIR CARE AFTER FOALING.

After the colt is foaled, the mare should receive for a week or more, light, easy digested food, as mentioned before, and if possible, a run at grass; or if in early spring turned on rye or wheat for an hour or more at a time with a rest, free from work of any kind, for a week or two. Kentucky breeders turn their mares with early foal out on rye pasture to promote their flow of milk. This is a very good plan, and horse breeders in more backward states than Kentucky would be proportionately benefited by following the same method. And if practiced before foaling, it will help to make milk, and to put the system in a healthful condition to meet the wants of nature. If the mare is expected to breed regularly, as said before, she should be taken to the horse the eighth or ninth day after foaling, as then she is very apt to receive him and get in foal, but should be returned for trial every fourteen days during the season while sucking the colt. If not wanted for service she can be turned in pasture and let go for five or six months, when the colt should be weaned.

When the grass is poor, or the mare is not a good suckler, she should receive such food and in such quantities as will cause her to furnish milk as the age and growth of the colt may demand it. The first few weeks of a colt's life is the most critical time of its

existence. It is then that it needs careful attention. The mare should receive such attention in the way of care and food as will promote good health. Her food should be so regulated that her bowels will be kept in a healthy condition, for if they become impaired, their condition is soon transmitted to the colt, which is the cause of the death of a great many; they should be closely watched in this respect, and if ailing, promptly treated according to the instructions as given upon this subject in the veterinary department.

If a rapid growth in the colt is desired, it is important that it should be full fed from birth, and in case the dam does not yield milk enough to give a strong and steady growth, this should be supplemented by cow's milk, and also by teaching it to eat oats and midlings. The colt can easily be taught to eat any kind of soft food, or sweet, warm skim milk, with occasionally a little oilmeal in it, which will produce just as good results.

When it becomes necessary to wean such a foal, it is only required to increase the amount of feed. The object is to keep the colt growing steadily, without losing anything, at weaning time.

WEANING TIME.

The colt may be weaned at five or six months of age, which is best done by keeping it from the dam for a few hours at a time, increasing the length of time at each separation. It will in this way learn to depend upon itself, which will be better for the mare.

No rules can be given for feeding, pasturing, stableing, grooming and handling colts. The breed, age, size and disposition of the colt, together with climate, locality and surrounding circumstances, and last but by no means least, the good practical common sense of the owner should govern in each case. A few suggestions may be made, not as a guide, but only as the

result of some experience and observation, and a great deal of reading and thinking upon the subject of horse breeding.

Study nature, and conform to her laws as nearly as possible; but still bear in mind that you are rearing one of the most domestic of all animals. One of the first demands of nature is freedom in the open air. No course of exercises can do the colt or horse so much good. He will give full play to every muscle in his body, and expand every air cell in his lungs. And not the least valuable part of this development is a good roll on mother earth. A horse that has been deprived of this privilege for most of his life cannot be said to be well developed. Another demand of nature is friendship. The well bred colt wants to be your friend. Treat him kindly and he will be one. Kindness will demand comfortable quarters, with abundance of sound food, pure water, and free access to rock salt at all times. In case his appetite fails, smaller rations for a time, or a change of feed will likely be better than drugs; but if showing much illness he should receive prompt medical treatment.

While we should aim at early maturity in all animals, it is not natural for colts to attain an unusual size or speed at an early age; and those that are remarkable in this respect are not usually the best sires. The inference then is, we had best let the colts be colts, live like colts and act like colts, and nature will make horses of them at the right time. The horse colts, if not castrated, should be put in a grass lot by themselves in due time to prevent accidents of any kind that may occur by leaving them run with brood mares or fillies. This should be attended to at the age of one and one-half years, or before, as a well-bred colt or an early foal often becomes troublesome during the second year. The breeder should study each colt very

carefully, and if he finds in one any constitutional trait of character, weakness or tendency to disease, which would injure his usefulness on the track, road or farm, unquestionably it is best to stop right there and abandon the idea of keeping him for a stallion; for, although many of his colts may be apparently free from these constitutional defects, yet just in proportion as he is a prepotent sire will they crop out in the coming generations. Although the stallion may never be required to draw the heavy load, to endure the long journey upon the road, or strain every nerve to win a race, yet his value as a sire will depend upon the success of his colts to do such work.

WHEN TO CASTRATE COLTS.

The proper time to castrate colts is something upon which there is a great diversity of opinion; while some breeders prefer castrating them quite young, at the age of one year, and some even at six months or younger, others claim that they should be allowed to partly mature first. But practical results has proven that the castration of colts should be governed more by their development than age. If a colt has made a rapid growth at one year of age, and is well developed in front as to the head, neck and body, or if he shows a deficiency in the hind quarters — being light, he had better be castrated than allowed to go a year or two longer, as early castration with a colt, as with any other animal, refines the fore part and develops the hind part. When the colt is to be kept for a stallion he should be kept the same as any other colt, allowed freedom in the open air at all times when the weather will permit, and not kept penned up like a lion. When two or three years of age he should be allowed to serve a few mares so as to test his breeding qualities, and and when off duty he should be used very much the same as any other horse, when it can be done with

safety. The heavy horse should be used on the farm, but the light horse should be used at just such work as his colts will be expected to perform. His feed should be enough to keep him in good condition, but not too fat. Superfluous fat is very objectionable in a stallion of any breed, for often they are not sure breeders, and often, too, serious defects are hidden under superabundance of flesh.

It has already been suggested that no exercise is so good as freedom in a paddock, a pick of grass, a bite of earth, and a good out-door's roll, and an opportunity to romp and play and be a colt again; therefore every stallion owner should have a paddock, enclosed with a safe fence, and large enough for a good run.

FEEDING, WATERING AND GROOMING HORSES.

There is probably no other work on the farm which the farmer will find so much difficulty in delegating to others as to the care of the horses.

The average work hand will over-feed with grain as well as with hay, but the watering of the horses and the cleaning of them, as well as the cleaning of the stables, and to the many little things looking to the health and good condition of the horses, are neglected with impunity. Unless the owner is convinced that his hand understands the management of horses better than he does himself, he should attend to the feeding of them, or at least see that they are properly fed, and that the horses, as well as the stables, are kept perfectly clean.

A consideration of the anatomy of the horse's stomach affords useful knowledge regarding feeding and watering. When convenient, horses should be fed and watered at short rather than long intervals. This is an obvious indication, for the small size of the stomach precludes the horse from rapidly digesting a

quantity of food sufficient to serve for a long period. In the treatment of horses, the nearer we follow their natural inclinations the better. This is more forcibly brought to mind when it is remembered that nature makes no mistakes. The horse should be fed in proportion to his size, and the labor he is required to perform. And no more should be fed than it will readily digest. It is not what is eaten, but what is digested, that furnishes the strength and muscle. A horse that is not working hard every day does not require the amount of feed that one does that is kept busy. High feeding, unless the animal is heavily used, is a positive injury. Therefore, it is better to under than to over-feed a horse. The first is only a temporary evil, but the last permanently injures the faithful animal. A fat horse is liable to indigestion, sun-stroke, cold, spasmodic or flatulent colic, and ever so many other ills, which a horse in condition is not only free from, but if properly fed, cleaned, and worked, is not liable to get.

Night is the only time when hay should be fed heavy, especially to animals used for quick work. Even the slow plow team should have but little hay at morning and noon feeds, but give them a generous supply at the evening meal. By doing this your horse will keep in better spirits and condition, and be free from any tendency to "pot-belly," which horsemen so much dislike to see.

No difference how hard a horse may be required to work, it should not be fed too highly. When at hard work horses will stand this extra heavy feeding for a while, but the strain on the system will begin to tell, and the animals will give out and break down after a year or two's work, when they ought to last for a dozen. Horses that show any tendency to a chronic cough should not be fed on dry feed, as dry, dusty, and

heating foods all exaggerate lung troubles. Their hay should be dampened, as no kind of hay is totally exempt from dust, and this trouble is best avoided by moistening all the hay which is allowed. Heaves in horses, frequent coughing, and difficulty of breathing, may be traced to dust in nearly all cases, and if the cutter is used as it should be in the summer, with the food well moistened and salted, the horses will keep in better condition.

An all-corn diet from one year's end to another without a single change, is another thing that should not be practiced. They may stand it on an all-oats diet, but even this standard horse feed should be varied quite often. Care should be taken in placing new oats or corn before horses. The tendency is to relax the bowels, and sometimes the sudden change from old to new grain results quite seriously. As the old shrinks a good deal in drying, though nominally dearer, it is usually cheaper, as well as better feed, than the new.

Old process oil cake meal, is very good for horses especially those that are grain fed. If fed one pint a a day with some bran it will go a long ways toward making their coats sleek, and in promoting health. The best and cheapest way to salt horses, is to keep a piece of rock salt in the trough. They are then liable to get all they want and when they want it, without wasting it.

The more system we have in anything we do the better we generally do it, and the better is the result that follows. There is no work on the farm that can be systematized to better advantage than the feeding and treatment of the horses.

VALUE OF GROOMING.

To all appearances a horse may be in good health and in a thriving condition, with but little attention

paid to him in the way of cleaning and rubbing, but it is evident that no horse can be in the best condition without a thorough grooming at least once a day. Don't think that you have properly groomed your horse when you have succeeded in scraping the dirt off so that your neighbor cannot see and laugh at it. Too many curry their horses merely because others might make fun of them if they did not make a pretension to keep them clean, and were they sure that no one would see them they would probably never use the comb or brush. They forget or never knew that while cleanliness is one of the objects of grooming, it is not the only or greatest one. The entire system of the horse is affected by the amount of rubbing it receives and the condition in which its skin is kept. A beautiful coat of hair adds greatly to the value of a horse, and no one will doubt for a moment that grooming materially affects this part at least. It is the general custom with farmers to curry their horses but once a day — in the morning just before going to work. This is done generally because it is a custom, because father and, grandfather did so, without stopping to think whether it is the best time or not. It is a good time for such work, but when one grooming a day is given a horse, there undoubtedly is a better time for it. Every horse that works hard is deserving of being groomed and cleaned twice every day, morning and evening. If one time is omitted it should be in the morning. One way to decide this matter would be to put yourself in the place of one of your horses. Would you like to go over night with all the dirt and sweat that would accumulate on you during a hard day's work in the muddy or dusty roads or fields? When teams are cleaned up well in the evening, and well bedded in well-kept stables, the matter of grooming them the next morning is comparatively light.

The benefit derived from more perfect rest more than compensates for all the trouble that it takes. Preventing disease is another consideration worth thinking about. The number of cases of scratches would be few if the legs and feet of the horses were cleaned every evening. Not allowing the sweat and dirt to remain on the hair keeps the coats of the horses in a much better condition, which is not the least incentive for a good cleaning off after a day's work is done. There is nothing that a farmer, who has the proper regard for his horses, should take more delight in than in getting them in good shape to spend a comfortable night after they have worked hard for him all day. If you have never tried cleaning off the horses in the evening, inaugurate the plan at once and you will never regret it. Do not be afraid of killing your horse with cleanliness. Many a horse has been unfitted for work a month or two from a sore shoulder, caused by dirt under the collar that would have taken but a few minutes to remove. The feet of many horses have been completely ruined by the shoes becoming imbedded in them, that it would have taken less than a quarter of an hour to have removed. There are many little matters pertaining to the general comfort and welfare of horses on the farm that might be mentioned, but to the thinking man they will present themselves, and by the successful horseman they will be attended to.

PRACTICAL SUGGESTIONS.

When the farmer must make every part of the farm and all connected with it be as profitable as possible, the question of raising good colts or mules, in addition to the other kind of stock raised on the farm, is an important one. Especially in this time when mixed farming is carried on so extensively that often a number of teams must be kept so that the feeding of

them furnishes a considerable part of the expenses of the farm. It will in many cases not merely reduce this item of expense, but often add rather to the profit of the farm, if a considerable per cent. of the teams are made up of good brood mares that will bring a good colt or mule every spring. With one or two teams, or more, as the work of the farm requires to do the principal part of the work, so that the brood mares can be used more or less, good colts can be raised at a very low expense, and especially when the extra animals must be kept in order to properly cultivate the farm. This is more noticeable when the principal work of the farm is in raising stock and grain to feed it. A considerable portion of the year there is little or nothing for the surplus teams to do. In fact four months of work in the spring and early summer is all that is necessary. Yet it does not really pay to buy and sell. It pays better to keep them and still better to have a portion of them mares and raise colts.

To be the owner of the best horses in the country is a distinction of which any farmer should be proud but to do so they must not make a mistake at the start, thinking that it makes but little difference what kind of colts they raise, so they are colts. It does make a difference, and a very considerable difference, as they will find by experience either with colts or mules, and that difference will show itself from the start. They want good brood mares, healthy, of good, permanent disposition, and they should also be of good size. Then breed to a good sire. The difference between the prices of service in a good sire and a poor one is very small in comparison with the differences that will be recovered in the animals when they are two or three years old. It costs no more to raise a colt that will grow into a large, handsome horse, one that will always command a good price, than one that is

small, ill-shaped, and of low value. In the long run it costs less, and is much more satisfactory.

Always select a stallion that is a standard of the breed he represents, and as perfect in every point as possible. The points to be most carefully observed are pedigree, size, strength, disposition, style and color. Do not forget that without size and bone blood is of little value. A horse must have something else besides a long string of ancestors to recommend him. He must possess individual merit. The color of the horse has much to do with its market value, and in breeding much prominence should be given to securing fashionable color in the youngsters. Every farmer should raise his own horses, provided he has the requisite taste and qualities of a genuine horseman. Every stable ought to be provided with one or two young colts growing into future usefulness, or to replace the old team when worn out in the service on the farm. Heavy horses of good style and well muscled are always in good demand, and our farmers cannot raise too many such animals. Fine, rangy carriage horses, that have good action are also always in active demand, but they should always be well broken before being put on the market. There is not much demand for unbroken animals in any of our city markets, and if the animals are well trained drivers, etc., they will meet with much more ready sale at better figures. They should be gradually educated for whatever purpose they are adapted. It is too late in the history of horse breeding to try to breed and train for heavy draft and speed in the same horse. A combination of qualities is necessary in the farm horse. He needs strength, but not so much as the dray horse should have; speed is not an indifferent quality, because he must be taken from the plow and cart to the carriage, or light wagon for occasional journeys. But a horse

of this kind seldom ever sells at as good a price as the heavy draft or carriage horse, which is the horse that a farmer can best afford to raise and will always be in the greatest demand. The best specimens of this class of horses are comparatively scarce, and are always needed by those who can afford to pay the best prices for them. It is not so much in the class of horses that are raised as it is in the kind and quality. The market for tip-top horses will never be over-stocked or even well supplied.

If you have a good horse try and learn his worth and appreciate his value before some one has purchased him for half his value. There is a great deal of pleasure as well as profit in realizing what one's stock is worth. And when ready to sell, always try and find a place and purchaser that the horse will suit. When a good offer is made for a colt or horse—one that will justify the owner to accept, paying well for the breeding and handling of it—generally, it is best to accept it; as the time to sell is, when a purchaser can be found.

HORSES OR MULES.

For the regular work of the farm many prefer mules to horses, while perhaps a much larger number would not have them. Are the objections raised to them real or imaginary? The following list of advantages and disadvantages of mules as compared with horses, given by a Texas Live Stock Journal, seems to place the mule on a much higher plane.

ADVANTAGES:

Mules are longer lived.
Not sucject to half the diseases.
Eat much coarser food.
Do not require as much care.
Are more sure footed.
Not so liable to injury from storms.
Do not get frightened as readily.

Not so apt to run away
Running away does not spoil them.
Will bear much heavier working.
Require much less grain.
Always ready when called upon.
Respond to curry-comb and brush.

DISADVANEAGES:

Are not so stylish looking.
Are not so fast on the road.
More apt to break out of pastures.
Not so handsome for the carriage.
Have less musical voices.

IMPROVING THE DISPOSITION OF HORSES.

There never was a time in the history of this country when its horses were individually as meritorious as they are now. I remember very distinctly, and so will any one else whose memory runs back over a score of years, that the very name of Thoroughbred seemed to be associated with a vicious disposition, and that the man who attempted to occupy the perilous position of groom for a Thoroughbred stallion was one who would now make an ideal cow boy, and who had no fears of Satan himself. How many blood curdling stories have been told about the conquering, or attempts to conquer, such horses! We need not run back very far for examples of viciousness even among our fast trotting horses. Ten years ago the majority of the noted trotters were considered dangerous. Dexter and Goldsmith Maid, were very crabbed in their natures, and Lady Thorn, was exceeding so, and it was not safe for any one but those who attended to them to go near them. But it is now changed, as we now find our most docile and most pleasant dispositions among the fastest trotters. Maud S. is a perfect pet, and a child, who knows enough to keep out from under her feet, is as safe in her stall as a man. The same may be said of most of the fast and rich-

bred trotting stallions. There is no doubt but what a radical change has taken place, and now the question arises, What brought this change about? To me there is but one answer to this problem, and that is, that kindness begets kindness. This is true in the human family, and must hold good in regard to the treatment of horses. The better blood we find in a horse the more good horse-sense we find, and to me it is a sign of good sense for a horse to resent a punishment. Horsemen have learned that to give a horse a good disposition they must cultivate one themselves. There is no better way to give a horse a kind disposition than to treat him kindly. If there is one department in stock raising in which kindness and gentle treatment is well repaid, it is in the raising and handling of horses. "As the man is, so is the horse," is an old proverb, and a very true one. Did you ever notice how much the horse is like his master? Take two young horses of the same breed, disposition and style, so near alike you cannot easily tell them apart, and place them in the hands of two men of different dispositions and character, and in less than twelve months there will be as marked a difference in the horses as there is in the men. The old term "breaking" horses should be ignored and the word teaching or educating substituted in its stead. From the time we begin to handle a young horse he should be encouraged to look to us like a child for all his wants and pleasures. He should know us as a pleasant companion, rather than as an unmerciful master.

Never allow boisterousness with the horses, as it is of all things the most calculated to spoil them, especially if they are in the least excitable, for every time they do anything wrong knowingly, they will expect to be hallowed at or otherwise abused, and will frequently act very badly, and often do some injury.

SHOEING HORSES.

Upon this subject (the shoeing of the horse) volumes of information could be written; but the author will confine himself to such information as he thinks will be of value, and shall offer only a few hints which he hopes may prove beneficial. Horse-shoeing, like any other profession, requires study and practice. If it is worth doing at all it is worth doing well, and if the horse-shoer be bent upon improvement, his practice will be worth more to him than all the written rules in the world. Let it be his aim to do what he does, well, and if he be suited to his profession, he will soon acquire that knowledge of horse-shoeing by reading and practice that will enable him to excel. Not all the bad or disordered feet of the horse lie with the horse-shoer, but owners of horses and grooms are often responsible for many of the diseases which are found to lurk about the feet of the horses, which demands that they see that their horses are properly cared for, and when necessary to be shod, that it is properly done.

The shoeing of the horse is a very necessary evil. In his natural state the horse possesses a foot answering to all his wants, its growth being equal to wear; but as soon as he is engaged as servant of man, there are but few horses, when in full work, whose feet will stand the wear and tear of road work; hence the necessity of protecting them with a shield of iron. The comfort and value of the horse very much depends on good or bad shoeing, in the same way as a man walking in good or bad-fitting boots. If at ease the horse will show his natural energy and buoyancy of spirit, in contrast to the sordid and dejected appearance of one traveling in pain; the one after work feeds with appetite and rest, the other is dejected, eats and rests but

little. These difficulties are discernable by those who are accustomed to horses and regard their welfare, whether he be master or groom, and any defect should at once be amended.

In shoeing the horse, as well as the man, the shoe should fit the foot, instead of trying to change the formation of the foot to fit the shoe.

One of the most important and least observed points in shoeing is the tread, that is, the proportion thrown on different parts of the shoe. On a well-balanced foot the wear of the shoe is tolerably even all 'round, except the toe, where there is naturally an increased friction and wear. The shoe should be evenly worn, and the farrier on taking off an old shoe should observe this and prepare the foot accordingly, for the chief thing to be accomplished is the manner in which a shoe is put on, rather than the pattern. In choosing a shoe the points to be aimed at are lightness and narrowness of iron, consistent with the class of horse and work; it interferes less with the natural structure of the foot, and gives a firmer foothold with less slip. A plain, broad shoe without grooves is the strongest (but allows free slip) and most suitable for road use in summer, or for farm work and horses of heavy step. Calks at both toe and heel give the strongest possible foothold for heavy draft work. The hind shoes are best with the heels alike on both sides, whether plain or wedge-shaped calks are used; it is not a good practice to have a square calk on the outside and a wedge-shaped one on the inside, as it must inevitably tend to twist the toes outward after reaching the ground. When the work is such that calks can be dispensed with, it should be done, as a shoe with even thickness from toe to heel, free of calks, is much better.

PARING THE FEET.

Before fitting the shoe, the foot should be dressed properly, and made perfectly level. It can best be made level with a rasp, when the shoe may be fitted to the foot. This should be neatly done, so it has an even bearing upon the foot. The heels of the shoe should come close to the frog, but not so close as to touch it or to interfere with its expansion. The bars of the foot should not be cut out with a knife or the frog interfered with, but let nature do her work with these.

The art of shoeing consists of fixing a shoe on the foot in such a manner as to preserve the natural tread whereby the freedom and elacity of action will not be impeded. This art is accomplished or not according to the skill with which the shoe is put on, more than to any particular style of shoe used, whether it be plain or with calks. The suitability of either depends on the strength of the foot, the nature of roads, and the kind of work required of the horse. And also with regard to the frog bearing on the ground. In a strong foot, with strong, healthy frog, it may be allowed; but if the frog be soft or spongy it would be injurious, and lead to lameness. Under no circumstances should the frog be prominent beyond the surface of the shoe. The frog is constructed of a very elastic material. It forms an elastic pad, diminishing concussion and allowing a limited expansion, giving some freedom to the action of the joints situated in the foot. Maintaining these parts of the insensitive foot in a healthy condition is of the utmost importance to insure a long life of usefulness.

Carelessness about horses feet produces much trouble. Loose nails or fragments of them left in the hoof work their way into the interior and produce inflamation which spreads up to the coronet or elsewhere

and forms a fistula. This is very difficult to cure, because the horse's foot is encased in a tight box from which the pus and diseased matter cannot escape. Care to prevent it should be constant. The feet should be closely looked after, and kept properly shod or trimmed, shoes should not to be allowed to remain on too long, and when removed the clinches of the nails should be well cut, and see that they are all removed and not allowed to remain in the foot to cause an injury.

SPREADING THE FOOT.

If it be desired to spread the foot at the heel, the foot surface of the shoe may be so beveled from the quarters back, that the outside of the foot surface will be just a little the lowest, this done, as the horse steps his weight upon the shoe, the heels will be pressed outward; the shoe thus beveled serves as a wedge to press the heels outward, and as this pressing out will be gradual, there will be no danger of injury to the foot; care should be taken that this bevel is not too great, if the outside of the shoe be the sixteenth part of an inch lowest, it will be sufficient; if the outward pressure be too great the foot will be weakened and injured. During the process of spreading the foot in this manner, let the foot be kept moist, by a run in damp pastures, or by keeping the feet wrapped with rags, and wet with salt water; or hoof ointment may be used with advantage. (See prescriptions.)

INTERFERING OR CUTTING.

Horse-shoers generally have a plan for preventing horses from interfering. A very successful plan for this is to form a shoe one thickness, but have the inside half of the shoe from heel to toe, the widest. Set the shoe close and use as few nails upon the inside quarter as may be necessary; use nails at the toe, but

they should be left out at the quarter. The shoe should then be made round and perfectly smooth upon the inside; and see that the foot, after being shod, sets perfectly level. If this be done the horse will not be so likely to strike, as the shoe will not come so near the ankle when the horse steps, and will naturally cause the foot to swing out when in motion.

STRIKING THE KNEES.

To prevent a horse from striking his knees, shoe light (the same as for interfering,) make the inside of the shoe, and foot, smooth, rounding the shoe and nailing it as described for interfering; make the shoe thin, and use no calks, unless the condition of the roads make it absolutely necessary. If the horse that hits his knees must be driven, it will be well to use knee pads, until the knees are well. The knees sometimes become thickened from hitting; for the removal of such thickness, see prescriptions. With road horses great care should be taken that the shoes fit nicely. The nails should be neatly clenched and lightly rasped.

SHOEING THE HINDER FEET, FORGING.

The hind feet of all horses may be shod with low calks, if it be desired, and this practice is growing in favor with horsemen. The hinder shoes need not be so wide in the web as the forward shoes, yet it is well that the shoe be strong at the toe. If the horse "forges"—hits his hinder shoes against the forward ones—thus making an unpleasant noise, use a smooth, concave shoe in front. See that the heads of the nails do not project beyond the shoe. Use a light shoe behind and set it well back. Thus shod a horse will seldom ever forge or cut his quarters in road use. With some horses the front shoes must be very short, while with others they must extend well back. When

shod short, and they still strike, they should be shod longer.

SHOEING COLTS.

Colts should always be shod light at first, and if the roads are such as to permit it, with tips. That is a plain shoe running from the toe to the front part of the heel, and thicker and wider at the toe than the heel. Such a shoe comes nearer nature and is free from calks which may cause the colt to stumble or cut itself. Heavy shoes upon a colt and especially if they have calks, must feel cumbersome and cause a difference in its action, and make it leg-weary in traveling, causing it to forge, cut its quarters, etc., while if it be shod as directed, there will be little or no difference in its motion. All colts when first shod should be driven with care. If it be desirable, the second set of shoes may be heavier than the first, but the shoes should be made concave upon the foot surface, so that the shoe may rest only upon the crust of the foot; then shoe light, and leave all the inside nails out, except the one just at the toe. This gives the foot a chance to expand and grow. Never use calks upon colts, particularly upon the forward feet if it can be avoided.

BAR SHOES.

Bar shoes may be advantagiously used for quarter cracks or weak quarters, or for horses that have corns in their feet, which can generally be cured by the use of such shoes, and by keeping the feet in a moist and growing condition. They should be so made that they will bear evenly upon the crust of the foot without interfering with the growth of the frog. With horses that have corns in their feet, the shoe should be so formed and put on that its bearing may not rest too much on that part of the foot immediately over the seat of the corn. The corns, if lightly paired and daily oiled with the foot oil, can easily be cured. Corns are

generally found in feet that are more or less contracted. Take measures to spread the foot, and when such efforts have been attended with success the corns will disappear. Digging deep after corns is not approved of, and by proper shoeing, or allowing the horse to go barefooted is much better.

COLTS OR HORSES FROM GRASS.

If a colt or horse be taken from a dry pasture, and with sound feet he may be shod at once, so far as the feet are concerned; but a colt should have its first training lessons in the stable, and not at the shoeing forge, and when quiet to handle he may be shod. If a horse or colt be taken from wet, marshy pastures, with soft and expanded feet, it would be advisable for him to stand in a dry shed or stable on the clean ground, for a week, otherwise as the foot contracts by drying the shoe will become loose, or the foot strained by the nails and shoe. Another point to be observed is, that a horse fresh from grass ought not to be shod too heavy, nor tight, nor more than three-fourths of the nails used, so that the foot may be permitted to contract in a natural manner, whatever method may afterwards be adopted.

STPOPPING THE FEET.

Stopping or stuffing consists of filling the under or ground surface of the foot within the shoe with cow-dung, clay, or some mixture of a soft and plastic nature. The popular reason for this practice is said to be that it keeps the feet moist and cool, like they would be in their natural element in the pastures, and this erroneous idea is persisted in by some intelligent minds, as well as by the grooms and *horsey* men. It is an error, first, because a horse with soft feet, whether taken from the pasture or softened by the stopping applied, is unfit to travel over rough or newly-stoned

roads without risk of bruising the sole or frog, and thereby causing lameness; secondly, by applying a stopping or plaster, an extra heat is produced in the part in same way, but to a less extent, as if applied to the skin, and when removed the opposite or cooling effect follows, thus causing an irregular temperature; thirdly, the greatest evil is that if cow-dung is used, it being in a state of decay, generates ammonia, which destroys the glutinous matter which binds together the horn fibres, leaving the latter exposed and weakened and when dry again the surface of horn shrivels up very hard. For example, take two pieces of horn of equal size, put one in cow-dung and the other on a cool floor for forty-eight hours; the first will become soft, whilst the other is little altered. Now, put the two pieces in a dry, warm place, similar to the warmth of the foot; the first will become hard, dry, and brittle, whilst the latter remains but little affected. The contrast will be greater or less, according to the condition of the dung or the length of time so treated. The same effect would be produced on leather or other fibrous textures. The best stable treatment is simply cleanliness and an occasional dressing with oil; in fact, treat the feet precisely as you would treat your harness. See prescription for this purpose.

HORSES WITHOUT SHOES.

The advice allowing horses to go barefooted during work on the farm is of paramount importance. It will do more good toward curing contracted feet than all other remedies. It will prevent contraction to a certain extent. Many severe cases of contraction by this simple and quite inexpensive process can be permanently cured.

Horses should be allowed a time to expand the hoof, and recuperate by going barefooted. I mean all and every kind of horse, no matter how or where

worked, if he can be spared for a few days from where the work demands shoes. They should go at least two months a year unshod.

In most kinds of work a horse can go barefoot without injury, and with certain benefit. The edges of the hoof should be rounded. This will prevent breaking to a certain extent of the outer edges of the hoof. Of all faults in a horse's foot, a stubby foot is the worst. This is nearly always caused by a high heel, consequent upon non-wearing down of the heel from its protection by the iron shoe, and then the paring of the toe, and neglect of paring the heel. Let any person catch a colt or horse of any age, which runs barefoot, stand him on a smooth stone, iron, or anything smooth and unyielding, and he will find the hair of the heels of such animals will touch the floor — or nearly so. If this is natural (and it surely is), what are we to say about a stubby hoof, the heart of whose heel is from one to three inches above the floor? What are we to expect when the sensible laminæ of a foot is so firmly held in such a vice? What else can we expect but contraction and a crippled horse?

The hoof itself is a horny structure covering the highly vascular and sensitive foot. It is formed similar to hair, consisting of fine tubes agglutinated together by a strong plastic material. In sound hoofs these tubes render the hoof slightly porous in the line of its growth, by which moisture is supplied to maintain its toughness throughout. The lower ends, by concussion and exposure, become hardened, the tubes contract and close, preventing the escape of natural and ingress of external moisture. Therefore any one can see how important it is that the horse should go barefooted at least part of the year, in order to allow nature to restore and preserve the foot. This of course

can be done by good care, and proper shoeing, but it demands close attention.

Plank floors are a fruitful source of bad feet. The feet require moisture, and if they be denied that moisture, they soon become diseased. Horses that are forced to stand upon dry, hard, plank floors, should have particular attention paid to their feet. Let the feet be washed often, and walk the horses in the morning dew, and do not allow their feet to become dry and hard; see that they are shod sufficiently often to protect the feet and in such a manner as to preserve a correct bearing of the weight of the body.

STABLES FOR HORSES

As to the stable for horses, almost every one who builds one has his own idea of the manner in which it should be built, but it has sometimes seemed to the author that those who build them, build them with a view to their own convenience rather than with the idea that the comfort of the animals which are compelled to occupy them should be taken into consideration. Light and ventilation are two of the most important items in the construction of stables for horses, and is too often lost sight of. Without proper ventilation and light, the health of animals kept in stables is sure to suffer in a greater or less degree. It matters but little how the necessary ventilation be obtained, provided it be obtained in some way. But draughts of air or wind, which may directly strike the animal, should be avoided, because a cold is almost a certain result if a horse be allowed to stand, even for a short time, where a draught of cool wind may come upon him. This is true even in the hottest days, and more particularly if the horse has just returned from his exercise, and is sweating profusely. The seeds of inflamation of the lungs or air passages are frequently germinated in this way The windows and doors for

ventilating purposes should therefore be placed high up. Some have windows placed just in front of each horse in the stables, having them so arranged that they can be opened or shut at pleasure, and were it not for the fact that frequently one forgets to close these windows, when the atmosphere has suddenly changed from hot to cold, such windows might be a very good thing, but as horses often take severe colds from having these windows open upon them during sudden changes of weather, we think that it would be better that the windows were placed higher up, at least so high as would prevent the possibility of the winds blowing immediately upon the horse's face and chest; or placed behind them. Let in all the air you please overhead, but guard against draughts of air from below. Stable doors should be strong, well fastened and not less than four feet in width, or eight in height, and no sill to step over; or if there is a sill at the door, it should be very low, and the edges well rounded off, for many a valuable horse has been ruined by high and sharp-edged sills at the door.

All well-regulated stables have many conveniences to be found about them. Tight cupboards for the harness; neat chests for medicines or liniments; boxes for brushes, combs, etc.; low tubs for bathing the horses' feet; good brooms for sweeping the floors and stalls, and other accommodations which naturally suggest themselves, can be had at but little troubls or expense, and no stable should be considered complete without them. The saving to the harness will pay for all that it costs to provide a means to prevent the dampness and ammonia arising from the manure coming in contact with them, and every other convenience will be found to be worth all or more than it costs, besides it gives the stable a neat and well-regulated appearance.

If farmers could only realize the benefit derived from these conveniences and from whitewashing the walls of their stables, many of the inconvenient and miserable-looking old dungeons in which the horses that have to work hard are kept, would be transformed into pleasant apartments. Keeping the stables in first-class order should be the most pleasant task of those who have the care of horses, and when the walls, stalls, and, when necessary, the ceilings have once received a good coat of whitewash the matter of keeping everything neat and clean is much easier. No barn can be considered complete without a good, tight-fitting ceiling. This is necessary for two reasons. First, it prevents the dirt and chaff from the loft above from falling on the horses, and, second, it prevents the ammonia from arising from the manure and urine deposited on the floor. The whitewash also has a double purpose, that of beautifying the stable and purifying the air. The cost is but a trifle, and no excuse need be offered on that score. The time it takes to put it on will never be missed, as it can be done at odd hours, or during a wet day. A well ventilated, well kept, clean stable has not half the attraction for flies and other vermin that a filthy one has, and for this reason, if for no other, it should be done. A farmer who will try thoroughly ventilating and whitewashing his stables both inside and out, will find it pays well for the trouble and expense required to do it, and will seldom abandon the method after seeing the results.

Stables should be built upon dry and airy ground, and the front yard kept dry and clean, so that when horses are taken to and from them they will have dry ground to walk over. Nothing is more injurious to the feet and legs of horses than to compel them to walk through a pool of mud, slush, or a mixture of manure, to their stalls, where they must stand, per-

haps, over night, with their legs and feet saturated with filth. The horse delights in cleanliness. Let there be a clean, unobstructed way of getting in and out of the stables. Further, cleanliness is essential to the horses' health, and stables should always be so kept; all filthy litter should be removed from them at least once every day, for if swept clean, it will add much to the neat and orderly appearance of the stables. Horses kept in clean stables, at least look more comfortable, and will certainly be more healthy. It requires but little time each day to nicely arrange a stable, and the satisfaction will pay one if there were no other reasons for keeping them clean.

A GROUND FLOOR IS BEST.

A common practice now days, (and a very bad one) is putting wooden or cement floors in horse stables. Horses closely confined in such stables sooner or later become more or less impaired in their feet, and are often bothered with capped hocks or knees, by sleeping upon such floors. Forcing horses to stand in stables where the floors are raised five or six inches higher in front than behind, keeps the muscles upon constant strain, and cannot fail of being injurious if such a practice be persisted in. When practicable such floors should be avoided, and good clay used in their place. These raised high enough to keep out the wet, and well underdrained to prevent dampness, is by far the best floor if kept clean, and it is warmer in the winter, and cooler in the summer, and will also prevent the horses' feet from drying out and becoming diseased.

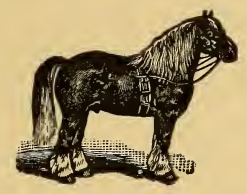
TRAINING DEPARTMENT.

Attached to every breeding establishment should be a place suitable for training purposes. This should consist of a yard, a shed, or what is better, a large box stall, twelve by sixteen feet is small enough; the floor should be ground and should be kept well littered with

tan bark, sawdust, or some other soft material. This place should be so arranged that it may be closed up tight, for; if you wish to train your young horse or colt well, you should be alone with him at first. The place should be so made that everything which will be likely to injure the horse may be removed; let the ground be smooth and level, also the sides of the apartment be smooth, and no projections, nails, or anything that might scratch or hurt the horse. Into a place of this kind, one can take a colt, or young horse, and no matter how wild he may be, a few hours of careful and judicious reasoning will make him as submissive as a lamb. Box stalls for horses where they may walk about at their leisure, are growing in favor with horsemen; and it does seem more natural to allow a horse the liberty of a box stall than to have him tied up all the time. Such stalls should be at least twelve feet square. Every farmer should have attached to his stables at least one such stall, where he may put his brood mare, a colt, or in summer when his other horses are at pasture, he may allow his driving horse, or his saddle horse, the use of it. The farmer or breeder will find such a stall an exceedingly useful appendage. Let all stables be constructed with a view to the comfort and well being of animals, and such conveniences may be added as will suit the fancy.

High racks are another nuisance. Horses are not formed like giraffs, to brouse from over hanging trees, but from a lower posture; hence, if they are fed from high racks for several months they are liable to become swayed in the back, and are often unable to graze without kneeling when first turned upon grass. High racks also place the eyes in jeopardy from hay seed and dust falling into them, producing inflammation. The best hay rack is the floor or stall. The best grain box, a portable one of iron or wood.

There are so many good ways of making mangers that the writer does not deem it necessary to lay down any particular rule. Those who build should be governed by their own tastes, always keeping in view the comfort and health of their animals, as well as their own convenience. I hope what has been said on this subject shall be the means of inducing even a few of such as may read this book to better arrange and keep their stables, when the desire of the writer will be gained



CHAPTER XXI.

EDUCATION OF HORSES.

EDUCATION OF THE HORSE—THINGS TO REMEMBER—CAREFUL TRAINING OF HORSES—TIMID HORSES—OUNCE PACKAGES OF PREVENTITIVES—HOW TO HALTER AND EDUCATE THE COLTS—TO BIT AND GUIDE THEM—HOW TO LEARN THEM TO STOP AND STAND—TO MOUNT THE COLT OR UNSAFE HORSE—WORKING THE COLT IN SHAFTS—KICKERS AND RUNAWAYS—TRAINING THE HORSES MOUTH—WILD AND UNSTEADY HORSES—HOW TO DRIVE THEM—TEACH THEM TO WALK—SPEEDING THEM—VICIOUS AND TRICKY HORSES—BALKY HORSES.

EDUCATION OF HORSES.

UPON the education of horses depends their value. therefore it is necessary that they should be thoroughly and properly educated. As the teachings of former works have become obsolete in many important features, and superseded by new and more effectual means of control, in educating and training, and by a decided advancement relative to care and treatment, I will, in this work, give my experience as gathered by many years of labor and observations. Not that the principles of educating the horse have been materially changed, or that my methods are entirely new, but greatly improved upon and simplified.

The demand for more light upon these subjects was never greater or more imperative than to-day. Horses have increased in value because men of wealth, leisure, and cultivated minds and tastes have recognized the fact that the horses bred by them can be im-

proved and rendered more valuable by the study of everything appertaining to their breeding, rearing and care. And now, in useing these methods of operating, I would suggest that they be given a thorough trial, according to instructions; as I have endeavored to make every principle understood, and claim the methods are valuable in their practical results. I do not insist that these methods are the only ones, but that I have always found them successful. The person who undertakes the calling of educating the horse should first learn to pay attention to the most important factor of a true horseman, namely, "self government."

Prof. York says: "The greatest study of mankind is man, and the greatest triumph is to obtain the mastery over ourselves. A hasty temper has permanently injured or absolutely ruined thousands of horses. Man is superior to the horse only so far as he exercises that superiority of intelligence, and the moment he allows his passions to have full sway, his superiority ceases. Whenever the operator becomes heated and nervous, he should at once rest from his labors; for, when he is cool and not excited, he will accomplish more in ten minutes than he can in an hour of frenzied attempts at control. We should strive from our first approach to obtain confidence of our subject, which once gained and never abused, will insure success.

WE SHOULD REMEMBER THIS.

You can teach the horse only through two senses; *sight and feeling*, and he can learn but *one thing at a time*. Therefore teach that one act alone. Make sure by repetition that he understands you, and be careful that you remember how you taught him. It is the act in man that causes the act in the horse, and any change made by you in the manner of conveying to him a knowledge of your will, is sure to confuse, and

he may fail to conform to your wishes for want of a conception of what you really mean, and not from a disposition to do wrong or rather not to do what you desire of him. Show your horse exactly what you want him to do, and endeavor to use the patience and reason in teaching and controling him you would at least believe necessary for yourself to understand if placed in like circumstances Make your horse a friend by kindness and good treatment. "Be a kind master and not a tyrant."

CAREFUL TRAINING OF HORSES.

The education of the colt should be commenced at an early age and thoroughly followed until it is old enough for use. One of the most serious mistakes that farmers make in training their young horses is in not doing their work thoroughly. When once undertaken the work should be complete. To stop and start at certain words, to turn to the right or left at other words, or signals, should not be enough, although many men who have the constant handling of horses are entirely satisfied with these results. The fact that horses are capable of learning these rudiments in training with as little teaching as they do only proves that they are capable of further training which may be carried to a considerable degree with profit as well as pleasure. It is not necessary to occupy the entire day with a colt, or give it a lesson every day, at all times, but an occasional lesson at not too long intervals, will go a long ways toward his education. The colt should be trained and developed to make him as nearly perfect in his class as possible. The heavy draft horse should be true and steady, and move off with his load at a square, vigorous walk. The trotter, pacer or runner, should have a free, honest gait, which is more valuable than a record, gained perhaps at too great a cost to his physical powers, or by being forced

past an honest gait. One of the most important lessons now is for him to learn that he is becoming a horse, and that he should act like a good, sensible one and not always be getting himself and master into trouble. And, above all, do not permit ignorant or brutal grooms to crush out that noble characteristic of every good horse, which Josh Billings calls "good horse sense."

Horses with high metal are more easily educated than those of less or dull spirits, and are more susceptable to ill training, consequently may be good or bad according to the training they receive. If a colt is never allowed to get an advantage it will never know that it possesses a power that man cannot control; and if made familiar with strange objects it will not be skittish and nervous. A gun may be fired from the back of a horse, an umbrella held over his head, a buffalo robe thrown over his neck, a railway engine pass close by, his heels bumped with sticks, and the animal take it all as a natural condition of things, if only taught by careful management that he will not be injured thereby. There is a great need of improvement in the management of this noble animal among the mass of people who handle them—less beating and more education wanted.

TIMID HORSES.

Timidity in a horse is a fault which usually can be cured, only by a course of kind and patient treatment. Rough usage will never accomplish that end, but is only calculated to make trouble more deep-seated. If he scares at any object, speak to him kindly and let him stop and look at it; give him a few gentle strokes on the neck with your hand, speak kindly to him all the time, and gently urge him toward the object he scared at; be careful not to urge him too hard at first; above all do not whip him; give him time to see that

he is not going to be hurt; when you can do so let him smell the object, provided it is not some offensive carcass, and he will not likely scare at it again. When this has been done several times, he will have gained confidence in you and in himself. The timidity will soon wear off and your horse will be cured.

Avoid teaching bad habits for the reason that it costs more to correct one, and form a new one in its place, than it does to teach ten good ones. So in the care and treatment of the horse that is sound and healthy, it is much less expensive to provide against accidents and disease, than to furnish medicines and treatment for repairing injuries or curing diseases.

I will invite your attention to some ounce packages of preventives as given by Prof. York and others: To avoid accidents, educate your colts, and aged horses as well, very thoroughly. Make your control absolute, and thus avoid many serious accidents, as they are termed, but are often the result of negligence, or, to be plain, laziness. All the theory in the wide world, without practical illustration thereof, is of no avail. Do not sit down and wish this or that done. Arise and do that which is needful, thereby increasing the value of your horse and adding to the safety of yourself and others. Take time to examine your harness and vehicle and keep them in perfect order. Many a life has been sacrificed and much property destroyed through negligence of duty. Adjust your harness carefully to the horse, and avoid galls, soreness, and subsequent atrophy of muscles swelling. Ill-fitting collars often cause these affections.

Be sure that your horse is adapted to the work you design him to perform, in size, form, and particularly so in disposition. Do not forget that the horse must go on foot while you ride, and avoid injuries from hard driving. Do not allow him to stand without covering

when warm, in severe weather or in a draft of air, but cover him with a good blanket, and especially his front parts instead of his hind parts, and thus escape colds, pneumonia and rheumatic affections. Do not censure another person for something you ought to have attended to personally, namely, as to care, feeding watering or grooming, and discharge all help that neglects or abuses your horses. Provide suitable shelter, food and pure water. Allow but a small quantity of cold water at a time when your horse is heated. Feed but very little corn, especially in hot weather, as fevers assume a more aggrivated form in horses fed entirely upon corn. Oats, clean and bright, and good timothy hay are good enough for any horse. Give each horse, twice a week, a tablespoonful of soda, and the chances are they will never be troubled with the colic, worms or bots. Do not increase allowance of food in anticipation of a hard day's work or drive, also avoid change of food after such. Commence a long journey at a moderate rate of speed and increase it if necessary towards the end, and do not stop the horse to cool off before reaching the stable, where you are sure of care. Before you tie in stall examine its floors, and remove everything from the manger and see that there are no holes for the grain to escape. Do not let your pride overrule your judgement. I believe a strict observance of the foregoing rules will save many a person, in a great measure, from the expense of surgical or veterinary aid, and prolong the life of many a good horse.

Retain the horse that is kind and in which your family has confidence, and increase your care with his added years. Do not sell him to suffer from neglect and hard usage in his old age. "A merciful man is merciful to his beast."

HOW TO HALTER AND EDUCATE THE COLT.

In order to catch and halter a wild colt put it in a small inclosure — a good box stall is best — then take a light pole two inches or less in diameter and ten feet long; two inches from the small end drive a nail, and eight inches from that one drive another. Take a common rope halter, with a stale ten feet long, spread the nose piece well open, and then hang the halter by the head piece upon the nails in the pole; take hold of the pole at the back end with the right hand, and farther up catch the pole and rope in the left hand. You now have perfect control of the halter and rope. Approach the colt from the left side and present the halter for his examination. Curiosity leads him to turn his head and look at it, when quietly pass the head of the halter back of his ears, his nose being in the nose-piece; turn the pole gently over, at the same time pull upon the stale with the left hand and you have haltered him alone and without excitement, which should always be avoided. Now, standing opposite the shoulder, pull sharply sidewise (with the right hand only), releasing him instantly. This can be done very easily in this way. but not with a steady pull. The colt will at once return to his former position. Repeat until he will remain standing with his head toward you. Then step to the right side and repeat as before. He will now move toward you every time you move. Now quietly pass a surcingle around him and buckle loosely. Then double twenty-five feet of half-inch cotton rope in the center, and pass the double end from shoulder backward underneath the surcingle, one-half its length; take hold of both ends of the rope with the right hand and grasp the halter with the left; by pulling a few times upon the surcingle he will become reconciled to it, when you can buckle the surcingle somewhat closely. Now place open ends of rope upon neck, and turn the

folded end over several times, which will form a loop. Open it wide, and, standing forward of the hip, reach with the right hand and take hold of the hair or bush of the tail. Should he be restive, take fast hold of the halter and turn him around a few times, which will produce dizziness, and he will allow you to pass the loop formed with the rope under his tail in the form of a crupper, but leave it loose—do not draw it up close. Now tie a knot in the halter under the jaw; pass the ends of the rope each side of the neck and through this nose piece. Then, standing in front of him, pull forward, and he will come like a rocket. Step aside and allow him to pass. Now turn him and repeat until he will follow without a pull. This method is heartily endorsed by all horsemen, as it gives the colt no chance to pull upon the halter. He follows instead of being led. Give him several lessons in leading, then change rope for leather halter, and tie in the stall as follows: Tie the tail rope to the manger first, a proper length; then tie the halter one foot longer than the tail rope, thus avoiding any pull at the head whatever, which prevents him from breaking loose.

TO BIT AND GUIDE THE COLT.

After a colt has been halter broken the next thing necessary to teach it is, to allow the bit in its mouth; and until reconsiled to its prensence, it con not be checked with good results. To do this take a light open bridle with a small smooth bit, put this on the colt and allow it to go for a few days, removing it only long enough to eat and drink until it has become accustomed to it. Then harness it, and teach it to stand reined up, by leaving it in that way a few minutes at first; lengthen the time and tighten the rein as it improves, but care should be taken not to rein it to tight at any time. To teach it to be guided

by the lines, attach them to the bit rings as usual but do not pass them through the terrets, let them lie upon each side; by this means they can easily be turned to the right or left when standing behind them; but they can not turn entirely around unless allowed to do so, and can be forced to move both ends at the same time. This method is of great value to teach old horses that do not turn promptly; for if there is any quite horse that is aggravating, it is one that turns but one end at a time. In giving this lesson it should be repeated until they obey promptly. In case they are stubborn and will not turn, use a whip to help draw their attention, but do not strike but one blow, and that when the pull is made. Pull them first to the right and then to the left, and they will soon learn to come as if hung on a pivot.

HOW TO TEACH A COLT TO STOP OR STAND.

Take a rope, strap, or strong web, fifteen feet long. If not using any harness, place a sircingle around the colt, pass one end of the rope under the sircingle and fasten it to one front foot; start the colt forward, pull the foot up to the body, and say "*whoa*;" use but one word and speak gently; use the lines but little to check it; only to keep it straight; repeat this several times and give it a lesson every day, for a while, and it will soon learn to stop by the word "*whoa*" without pulling upon the lines or bit. Any horse can be made so perfect in this way that should it start when loose, it would stop by the word. In giving the colt its lesson with the foot rope it should be used on both sides, changing occasionally, and between the hind legs, which will remove all fear and nervousness and prevent any trouble as to kicking, etc. This foot rope should be used the first few times when driving, as it insures safety and is a good plan to teach a horse to stand still in harness. Some consider this too much

trouble when training a horse to stand when in use, and carry a pair of foot straps instead. These are made by having two straps long enough to buckle around the front pasterns, and then fasten together with a strap four inches long. Thus secured a horse can be learned to stand the same as if tied by the bridle. It is far safer, and will require but a few lessons to learn it to stand any place unhitched. Either method as given is valuable to learn a horse to stand when hitching up, or mounting upon its back. A colt thus broken will always stand still until told to start. This long foot strap is very valuable to learn a horse or colt to back. This requires two operators; place the foot strap on as usual and while one persons pulls upon it to lift the foot, the other takes hold of the lines or bit and tries to back the animal. When the foot is raised let it down immediately as the horse settles back; keep repeating until it learns to back at the word "back," or by the pull upon the lines. To learn horses to back is one of the most important parts of their education, as a horse that will not back is very annoying, and often will not sell well.

TO MOUNT THE WILD COLT, OR UNSAFE HORSE.

In order to learn the wild colt or unruly horse to be rode, there is no method superior to the Rarey system; that is, fasten up the left fore foot by passing a strap around the pastern, raising it up and fastening it to the arm. (For this purpose a good strong hold-back strap of buggy harness will do). Then take another strap long enough to go over the back and down to the other front pastern, around which it should be fastened. Take hold of the bridle with the left hand and this strap with the right hand, turn the horse's head to you until he attempts to turn, then quickly take the other foot from him and he will come down upon his knees. He may make a few struggles, but

will soon lie down, then treat him kindly and accustom him to being handled in every way; also to the saddle, harness, etc., and he will be completely subdued.

WORKING THE COLT IN SHAFTS.

After the colt has been well educated as spoken of as to its first lessons, it should be placed in shafts. To do this, procure three hard-wood poles, two twelve feet long and one ten feet long, about the size of a buggy pole. Lay two of them down in the form of shafts, small ends about two feet apart, back ends about ten feet apart; bolt the third pole upon the side poles, one foot from the back ends; attach the side straps well forward, and the fastening for the tugs upon the shafts to suit the length of the tugs. Now place upon the colt a strong single harness, and carefully place it in the shafts. Once securely hitched, speak gently to it to start, which will have to be straight forward, as it cannot turn short around or run backward. They should be driven once or twice a day until well taught to do as wanted, for, once educated in this way, they can be hitched to a carriage with safety. These shafts are worth more than all the break-carts that were ever invented in which to break colts, providing the horseman is not too lazy to walk; and can be made for ten cents (the cost of two $\frac{3}{8}$x6-inch bolts,) barring the green poles and time. In giving the colt its first few lessons care must be taken not to work it long so as to worry or over-heat it, as that is liable to make it sore and sulky, and it will not learn so fast as where this is avoided.

KICKERS AND RUNAWAYS.

In handling colts or old horses that are inclined to kick, before attaching them to anything they should be given a few lessons in harness. This can be done by placing upon them a single harness with long tugs. Then take an open bridle that has loops on the head-

stall, for the over-check to pass through. This over-check should be twenty-six inches long when made up, and is made by taking two straps one-half inch wide, the proper length, with buckles at one end to fasten in bit rings, and a loop at the other end for the rein to pass through, with a sliding loop to hold them together in the center. After this is attached to the bridle, take twenty-six feet of quarter inch rope, double it in the center, place it over the head, pass each end down the head and through the bit rings from outside, up through the loops on the ends of the over draw, then back through the territs. Now fasten a ring to the crupper just back of the hip straps; pass the ropes through this, and by pulling elevate its head as high as wanted. In pulling upon these ropes care must be taken not to pull too hard or sudden, for it is very severe, and may cause the colt to rear up and fall backward, thus injuring it; nor should the head be elevated too high at the start; but if they persist in kicking, raise the head a little higher, which will subdue them. Now fasten the tugs to a swingletree and allow it to drag on the ground, or attach a board to it. When an attempt is made to kick, pull lightly on the rope, which will raise the head so they cannot kick. A few lessons in this way will soon cause them to quit kicking. When placed in the shafts, these ropes should be tied to them the proper length after elevating the head. In using this method, the bit known as the "Rockwell bit" should be used. It is a four ring bit; two of the rings (or links) slide upon the bit. The over-check should be buckled in these sliding rings or links. The same bit is also good to drive a hard puller or runaway horse with. By sliding the loop down that holds the over-check together, it gives such power as will control any horse. Another plan for a runaway is, where the common bit is used, take a

quarter inch rope fifteen feet long, tie around the neck, the same as the common rope halter; double the rope and pass it between the loop and neck far enough to put the loop in the horse's mouth, which forms a severe bit by pulling on the long end of the rope. Other methods which are good and can often be adopted in case of necessity, is to take a good, strong, hard-twisted cord, tie this in the rings of a common snaffle bit, so that it is some shorter than the bit. When the pull is made the force comes upon this cord instead of the bit, which will hold most any horse. Or take a cord of the same kind and pass it through the rings and around the nose, tieing it together underneath. This prevents the horse from opening its mouth when pulled upon, and will control a hard puller or vicious horse. To form the common kick strap, fasten a ring to the crupper, as spoken of before, but fasten it well back; take a strap or rope long enough to pass from shaft to shaft; tie or buckle one end fast, pass the other end up over the hips through the ring, and down to the other shaft and fasten it. Very often a colt can be driven this way with perfect safety.

TRAINING THE MOUTH.

The mouth of the horse should be well trained, so that he will readily obey the rein at all times; for a good mouth is one of the essential points in a good horse. Every possible precaution should be used not to make the mouth sore, and to make it what it should be; for a horse with a bad mouth can never be relied upon. This will be best accomplished first, by care of the mouth and proper handling. Teach the nervous horse to submit to the bit, and the dull one to arouse at the motion of it. In driving, a steady rein should be kept, and the horse should be taught to pull upon the reins only sufficiently to keep him steady in his gait. When using a fine driving horse, there is a cer-

tain feel of the bit in the horses mouth, which is pleasant to the driver, and makes the horse act well. He holds his head in the proper position and readily obeys the rein This feel is understood by all good horsemen; yet few know how to train a horse's mouth, so as to obtain it. If a horse pulls hard upon the bit all the time, he is a nuisance, and one that will not permit any pull at all is no better. The bit is the controlling power in horsemanship, and a perfect control of the mouth can only be obtained by a careful and judicious course of bitting, and afterward by careful driving. Severe bits of any kind are in most cases an injury to horses, and should never be used if it can possibly be avoided; as with a spirited or ambitious horse they only have a tendency to anger them and make them fight the bit; whereas, if a pleasant one is used in their place, the horse will at once act much better Severe bits will also cause the mouth to become hard, calloused and void of feeling, so that bits have but little or no effect. This often causes hard pulling and uncontrollable horses.

WILD AND UNSTEADY HORSES.

Some young horses seem wild and refuse to trot honest. Long, slow drives are the best to teach such horses to be steady, and regular road work in the hands of a good horsman is what they need. Excitable horses should be gradually accustomed to trotting in company, and should be coaxed rather than forced. It sometimes improves such horses to drive them in double harness for a time. If this be done, care should be taken to keep them as quiet as possible, thus teaching them to be steady. This is best accomplished by working them with a well-learned horse that is prompt and fast, so that he can always go as fast, as well as slow, as the nervous horse can.

DRIVING HORSES.

No rule can be given for the proper driving of a horse on the road or track. A few hints may be given, but to acquire the ability to drive a horse well requires pactice and a careful study of horse nature. Not every man can become a skilful driver; it is a profession that requires study. In driving a pair of horses, aim to make them drive alike. Change the bits and reins until it is found what suits the team; use bits that are strong and that will best suit the horses without irritation. Sharp bits are not often needed. It is difficult to find two horses that will drive exactly alike. The one may need the whip, while it would irritate the other. Aim to teach all horses to be kind and obedient, and always be sure they understand what is wanted of them before attempting to force them. Some men whip a horse for no apparent purpose. Teach them to be quiet, for a quiet horse will always sell well.

In driving always hold a steady line, and if the horse needs urging use the whip lightly. Do not slap or jerk with the line, for that will soon spoil any horse. In the education of a horse the first, and one of the most essential things, is to teach him to walk.

A FAST WALK IN A HORSE

Is the most valuable gait that training can acquire with most horses. It is very valuable in a plough or wagon horse, and particularly so in a saddle or driving horse. Some horses will trot along very well until they come to ascending ground, when you wish to relieve them by letting them walk up grade. They then fall into a slow, lazy walk, that is very trying to the driver's patience; but a well trained walker will step off very briskly at the rate of four miles an hour, and the driver feels that he has been detained very little by letting his horse walk up the hill, as he starts off at

his usual trotting speed, being relieved by the change of walking. Colts should be trained to walk fast before there is an attempt made to improve them in any other gait. This may be accomplished by commencing very young, and leading at a walk by your side, urging additional speed little by little, without letting it break into a trot; but this must not be continued long at a time, so as to weary or tire them. One or two short lessons a day will show a wonderful improvement, but after-lessons will be required to prevent a relapse. A fast and prompt walking farm team is much more valuable than a slow one, as they will accomplish more work in the same time, either on the farm or road, and, as a general thing, are much more pleasant to handle than a slow, sluggish team.

The horse is a very teachable animal, and if treated with consideration and care he will be found easily taught any good trait you may wish to teach him, and is curable of his various faults. To prevent, though, is always better than a cure.

SPEEDING HORSES.

In driving horses at a rapid gait they should be kept well in hand by holding a steady rein, and learning them to pull upon the lines only sufficient to steady them in their gait. Do not give them long and hard drives, but drive at a moderate gait, speeding them over short, smooth parts of the road or track at certain intervals. Never aim to drive them beyond the point where they seem to like to trot, and will trot squarely and willingly; nor beyond an honest gait, and lengthen the distance for them to speed as they improve. A horse that lacks knee action, or forges or cuts his quarters, should be shod heavy in front and reined high. One that lacks action behind can be improved by checking it high, and speeding it over declining ground; but the ground should not decline

too much, or the animal may be injured in speeding over it.

VICIOUS, RESTLESS AND TRICKY HORSES.

Horses, like men, have some very bad habits which need reforming, most of which are formed by bad education when young. To prevent this, strive to educate them right at first. To avoid being injured by such horses, adopt such means as will subdue them. Some horses are so thin skinned that a harsh curry-comb, or a comb in a heavy hand, so irritates them that they show resistance. With such horses only use a brush or cloth, or in using the comb be careful and use it lightly. Speak kindly to them. Harsh treatment only makes matters worse. If they are inclined to kick, or be vicious in any way, tie a rope around the neck, and form a loop for in the mouth, and a few sharp pulls on this rope will subdue them. While grooming with one hand keep the rope in the other ready for action, but do not punish them for any imaginary offense.

In teaching a horse to stand to be shod, adopt the same method and give him several lessons at home, completely subduing him before taking him to the shop. For there, where everything is new, is a bad place to teach him. Take up the feet and rap on them the same as the smith would. Repeat the lesson until he stands quietly. To prevent pawing in the stable, take a stiff rawhide whip, bore a hole through one of the stall boards on a level with the knee or lower. Put the large end of the whip in the hole, and fasten it tightly. In this way when the horse paws he will catch the whip with his foot and pull it back, and in flying back it will whip him on the other leg. This so frightens him that he will not experiment much with it. Some fasten a short chain to the leg with a

strap; this answers very well with some horses, while with others it is only an annoyance.

BALKY HORSES.

If there is anything on earth that will try the patience of a good horseman it is a balky horse, especially one that balks without any provocation. The imaginary ways to make a balky horse pull are plenty; but to do so, is the next thing. I have had considerable experience with this class of horses, as well as all other kinds of tricky ones, and I will just mention a few ways that I have adopted to work them and make true horses out of them.

The first thing to do is to find out their true disposition. If they are high-bred they are likely to be high-spirited, then use every other means before striking them. When they attempt to stop, speak to them, saying "whoa." Let on you want them to stop; let them stand a few minutes; turn them to the right and left, speaking quietly to them, then ask them to go, and they will be more apt to do so than if they are abused. High-bred and spirited horses will require considerable patience to teach them to pull a heavy load if once they have learned the habit of balking, but may be very easily taught to do light work. A cold-blooded, balky horse will generally require punishment to subdue him. Apply the whip sharply to the front legs; if this fails, take him out and turn him around in a circle until he becomes giddy; hitch him up quickly and he will most always go. If this wont do, lengthen his traces out, fasten a rope or line to the end of his tail, pull the tail down tight between his legs pass the line between them, bring it forward and fasten it to the end of the wagon tongue, if hitched double. In this way he can not pull back, and generally goes at the first effort. If hooked single, pull sharply on the rope from in front, but look out for him for I

have seen them come rapidly. Anything that will attract their attention will have a tendency to make them go, as they cannot think of two things at the same time. Therefore give them something else to think about. Tie a small cord tightly around the front leg or ear, or fasten a small, round button to the cord and drop it in the ear. Any of these methods may have a tendency to subdue them; but keep cool while operating.

And now having enumerated some of the most important requisites as to the care and education of the horse, I will give a treaties on their diseases, and also those of cattle and sheep. This I will make as plain and brief as possible, avoiding all superfluous or technical language so the average person may quickly find, plainly understand and adopt their use. In this department, as in my former writings, I shall not make use of any teachings except those that I know from practice, observation, or good authority, can be relied upon. This treatment, as well as the entire book, is intended to give the stock owner such information as will enable him to dispense with the unprofitable and perilous services of ignorant pretenders, and to apply rational means of cure when he happens to be beyond the reach of the accomplished veterinarian; and this, it is confidently hoped, it will accomplish, for all who will intelligently study its pages.

CHAPTER XXII.

VETERINARY DEPARTMENT FOR HORSES.

Introduction—Symptoms of Diseases and How We May Know Them—Treatment of Various Diseases and Injuries to Which the Horse is Subject—Disease of Digestive Organs—Colic—Botts—Dysentery—Pneumonia—Congestion—Diseased Bladder and Kidneys—Colds and Chills—Distemper—Epizootic, Pink-eye—Heaves—Glanders—Brain Fever—Fistula and Poll Evil—Spavin—Thorough Pins—Ring Bone—Curbs—Cribbing—Lampass—Scratches and Grease Heel—Thrush—Injured Feet—Founder—Atrophy—Sprained Tendons, Stifle Whirlbone or Pasterns—Injured Joints—Swelled Limbs—Surfeit and Mange—Galls or Boils—Blind Teeth—Weak Eyes—Worms—Choak—Sore Mouth or Tongue—Parturition—Foul Tail and Mane—Broken tail—Wounds or Cuts—How to Remove Callouses—Lock Jaw—Big Head or Jaw—Paralysis—Bleeding Horses—Lice—Hide Bound—Diseases of Colts—Formulas for Special Medicines—Corrosive Liniment—Dexter Liniment—Sweeney Liniment—Thrush Liniment—Valuable Eye Wash—Cataract Liniment—Cooling Lotions as a Leg or Body Wash—Foot Oil—May Apple Liniment—Sweating Liniment—Golden Liniment—Mouth Wash—Tonic Preparation—Worm Powders—Fever Powders—Cough Powders—Condition Powders—Cleansing Powders—Healing Powders—Golden Ointment.

INTRODUCTION.

IN discussing this subject I propose to depart from the usual method adopted by other works of this kind and instead of discussing at length the different diseases of stock, with a long article relative to pathology, symptoms and diagnosis of each case, which causes delay and tends to weary the reader without conferring any lasting benefit, to proceed, and

give in as brief a way as possible the treatment for some of the most common and frequent ailments of stock, first among horses, and then cattle and sheep. In this part of the work, as well as in all other parts, it is my object to be useful rather than offend, or appear learned, and in offering to the public the information herein given, I shall do so with candor. I do not claim to be the originator of all the treatments given, but have in many instances tested the most of them, and know them to be of value. As medicines are only used to assist nature to effect a cure, those methods that will assist the most should be used, and my experience is that for internal treatment the proper medicines administered in small doses, is far better than a heavy dose, and a proper application externally in most cases is far better than severe blistering or fireing. Kind treatment in the way of good nursing will do more toward the restoration of a sick animal to health than so much strong medicine.

Medicines, powerful in their nature, for good or evil, are often administered in large doses, when little or none is necessary; and such treatment is often prescribed by those not knowing what ails the animal, or without any knowledge whatever of drugs or the effect they may have upon the system, and strongly urge that they be administered, simply because somebody else had used them, and the animal did not die. This is all wrong. The first business, when called to a patient is to ascertain the cause of the trouble. Think for yourself, uninfluenced by the opinion of others, and give the patient prompt attention as is thought best. When such cases occur that are not properly understood and cannot be properly treated by the inexperienced, promptly employ some practical veterinarian to attend to it.

SYMPTOMS OF DISEASES, AND HOW TO KNOW THEM.

The question is often asked: How may we know how to tell what the disease is that this or that animal is affected with, as it cannot speak? To this question I might repeat "nature has but one set of weights and measures," and these only should be used. Thus, if a horse or other animal has corns or an injured foot, it will be as sure to go lame as it would with an ordinary sprain. The uneasy eye, the anxious expression, and the sharp, peculiar look, tells its tale of suffering, and the description is so plain and true, that every one should learn to interpret them. Often the suffering can be told by the pulse, which is felt on the inner angle of the lower jaw (this being the most convenient place). The state of the pulse tells the condition of the heart, whether the disease is of an exhalted or depressed character or whether sickness is at all present. The pulse is more frequent in young than in old animals. In the full grown and healthy horse, it beats from 32 to 38 times in a minute; in the ox or cow, 35 to 42, and in the sheep 70 to 75. In imflammation and fever the frequency of the pulse is increased, in debility and depression it is lower, but sometimes quicker than natural. As the pulse varies so much it takes some practice to determine and understand it. A healthy horse breaths once to three or more times beat of the pulse. When the breathing is not natural it indicates disease, but both the pulse and breathing can be quickened by exposure to heat, or the hot sun; hence, the advantage of placing animals in a cool and airy place in warm weather when unwell, to assists nature in casting off disease.

Every man ought to be sufficiently acquainted with the habits and needs of his stock to be able to tell at once when it is even slightly out of condition. The stock raiser who gives even a moderote measure of attention

to this matter will soon learn the ordinary symptoms of slight indisposition, and experience will soon enable him to apply the needed remedies. It is very often that a slight change in diet, or the administration of such simple correctives as every farm contains, will at once bring an indisposed animal into thrift again; while if neglected in the start and from day to day, the disease may assume a fatal form.

TREATMENT OF DISEASED AND INJURED HORSES.

Disease of the Digestive Organs—Animals of different classes in domestication are somewhat differently placed in regard to their liability to disease. For instance, horses and breeding animals generally, are fed with the sole object of keeping them in health or in working condition; whereas, cattle, sheep, and swine, which are intended for the butcher, are supplied with as much provender as can be utilized econimically by the organism, the object being to fatten them as quickly as possible, without regard to the remote effects of this "forcing system" on the health of the animals. A natural result of this artificial method of feeding is the production of certain diseased states of the *digestive organs*, from which working animals are comparatively exempt. On the other hand, the working animal is more frequently subjected to climate influences, and to alterations of exertion, sometimes of a violent kind, with complete inaction in the stable—conditions which render him liable to diseases of the respiratory system in particular. But the careless or irregular feeding of horses frequently causes *disease of the digestive organs*, which causes death by *inflammation* or *Colic, Spasmodic and Flatulent.* Colic with horses is not an uncommon thing, and most every person who is in the habit of handling them, is acquainted with the cause and symptoms of this disease. Cause: A change or excessive amount of food or water, or

some similar unknown cause, which is the result of acute indigestion. Symptoms: Rapid breathing, uneasiness, pawing, lying down, and rolling. With spasmodic colic the pain is more severe, and death occurs quicker than with flatulent colic, which is slow in its work, often the horse living for several days, and becoming partially or altogether blind. Treatment:

Tincture of aconite, one ounce;
Belladonna, one ounce;
Spirits of eather, one-half ounce.

Give on tongue from fifteen to thirty drops at a dose every twenty minutes, until relief is given. A colt will not require as much as a larger horse. In severe cases, repeat the dose three times, using at least thirty drops at a dose, and then if it does not give relief, take sweet milk, one-half pint; turpentine, two tablespoonfuls; and give as a drench. Give an injection of soap, salt, and warm water, and apply mustard and warm water to abdomen. The animal should never be urged out of a walk, and must be kept warm by blanketing, if the weather is cool.

In case the *Aconite* and *Belladonna* cannot be procured, use *Laudanum* and *Ether*, thirty to sixty drops at a dose, or twice the amount of *Spirits* of *Camphor*, in a small amount of *water*, or in *one-half pint* of *whisky*. Never resort to heavy drenching, or violent exercise, or puncture (unless all other means fail); for such treatment has killed more horses than the disease. After the animal has recovered, give it light food and avoid too much cold water at a time. When recovering from a severe attack, measures must be taken to tone the stomach; for this purpose use the condition powder in light food.

Note.—Every farmer should keep a bottle of the Colic Remedy, (as made by the first given formula)

on hand ready for immediate use at all times; for they will find it very valuable, for colic and other diseases of the horse, and will see by this work that it is very valuable for milk fever with swine, cattle, and sheep, and hoven or paralysis when used as prescribed.

BOTTS.

Symptoms and treatment the same as in colic. *Turpentine, Coal Oil and Vinegar*, equal parts, well shaken together, and rubbed on the eggs of the bot-fly on horses' legs, it is said, "will utterly kill them after about three applications." This is a safe and easy remedy to apply, in the season when the fly is troublesome, and it is much better to kill these pests than to run the risk of an ever accumulation of them getting into the horses' stomachs and causing sickness, by by preventing the food giving proper nutrition.

DYSENTERY OR SCOURS.

This is something that occurs very frequently with horses, and especially with road horses or colts.

Cause: A change of food, generally from old to new grain, from corn to an over-feed of oats, or from grain to grass, and often by a change of water. Treatment:

Water, three pints.
Whiskey, one gill.
Wheat flour, one pint.
Laudnaum, thirty drops,
And one fresh egg.

Thoroughly mix and give as a drench. If necessary, repeat in six hours. A cure will often be effected if the animal will drink the wheat flour alone given in water. This should be given every two hours until relief is obtained; and light food, such as oats, bran and sweet hay given; care being taken to avoid any violent exercise.

PNEUMONIA, INFLAMMATION OF THE LUNGS.

This is a common and fatal disease with horses, and is caused very often by abuse and neglect, which causes them to take cold. By riding or driving a horse until very warm and then stopping it in a cold draft to cool out, or by leaving a window open in the stable during a cold and sudden change, are some of the most fruitful causes.

Symptoms: The first attack is rather slow, the breathing is more or less laborious, and the patient is dejected and down spirited. The coat is rough, the body and legs cold, and the bowels constipated; the patient stands with head and ears drooped and legs apart as if to prevent falling. On examination, by placing the ear against the side of the patient, over the lungs, if a grating or tearing noise can be heard as the patient breathes, prompt treatment must be given.

Treatment: First make the patient as comfortable as possible in a good warm box-stall, well bedded, if in the winter, and kept dry and clean if in the summer. Then give on tongue twenty drops of the *colic cure*, which will regulate the pulse. If necessary repeat the dose every thirty minutes, or until the animal breathes naturally. After giving the first dose, make a thick solution of mustard by stirring

Ground mustard into water or cider vinegar,

and rub it well into the hair along the throat, chest, and over the lungs; cover with an old blanket and leave it on for some time. If in cool weather put a blanket over the patient to keep it warm; wash the legs in vinegar and salt as hot as can be applied, and rub vigorously with the hands until dry to get up a circulation, then bandage with flannel. If the patient commences to recover with first treatment discontinue the use of medicine, if not, contine to give the colic cure as directed, and keep the patient warm. As soon

as it can be induced to eat, give soft food with the Condition Powder in it twice a day, and a tablespoonful of *tincture of iron* in the water once or twice a day. Care must be taken not to give too much food until recovery is complete.

OVER RIDING OR DRIVING.

Very often brutal or thoughtless persons ride or drive a horse so hard as to cause congestion on the road. Often the horse will reel and fall in his tracks, or upon stopping a thumping noise can be heard several feet away, and he can hardly stand.

Treatment: Bleed freely in the mouth or neck; a drop of blood now is worth a pint in an hour; give a small amount of salt water at first, and if relief is not obtained in a short time,

Give thirty drops of the colic cure;

Repeat every thirty minutes until relief is given; bathe the head with cold water and keep the body warm to to prevent chilling. If any evil effects are observed afterwards, use the Cleansing Powders in soft food or turn them on grass.

INFLAMMATION OF BLADDER AND KIDNEYS. PROFUSE STALING.

This is something that horses are troubled with considerably, and is caused by bad food or exposure to cold, rain, storms, etc.

Treatment: Use the Cleansing or Condition Powder freely for some time, and give

One ounce of sweet Spirits of Nitre;
Or evacuate the bladder with catheter.
For horses press into the passage the pith of an onion;
And for mares introduce a little black pepper.

Either one will produce staling in a few moments.

Foul Sheath. — All horses are troubled more or less with foul sheaths, and they should be looked after and cleaned by washing in warm water and castile soap,

then oiled with fresh lard or sweet oil. Either of these troubles can be told by the difficult staling.

CHILLS, COLDS AND DISTEMPER.

These diseases are of frequent occurrence with horses, but neither one at all dangerous if promptly attended to. Chills and colds occur more with horses that are in use, than with colts or horses that run idle; and are caused by exposure and neglect. Many diseases and most fevers in horses as well as persons, are preceded by a chill, denoted by shivering, and if the chill be checked promptly the disease may be averted. The best means of accomplishing this is to give the usual dose of *colic cure.* Hand rub the legs and bandage loosely, also throw over the animal an extra blanket for a few hours, and give all the cold water the animal will take. The patient should have extra care for a few days until it fully recovers. Distemper is a colt disease, but frequently old horses are troubled with it, and of its being contagious there is no doubt; for when it once breaks out on a farm, it generally attacks all the young horses before it ceases, and quite often the older ones. Symptoms: The animal becomes stupid, hair looks rough, and a discharge appears at the nose. First, of a watery nature, but as the disease grows worse, the discharge becomes thicker and more offensive. One of the peculiar features of the disease is a swelling or tumor under the jaw. The size of the swelling indicates the severity of the disease, and often when neglected and not properly treated, it causes death by choking the animal; or if it recovers its wind will most always be effected.

Treatment: Give the Condition powder in soft food twice a day; steam the patient well by placing a bag over the nose which has been filled with some *hot hops and bran*, pouring hot water in to keep up the

heat, or put some *pine tar* in an old shoe that has a hole in the toe, set the tar on fire, and smoke will come out of the toe of the shoe, which can be held under the patient's nose, and in this way well smoked.

In bad cases bathe the throat well with *mustard liniment*, or *distemper liniment*, then smoke daily, as directed; or by steaming well every day, and using the distemper liniment until a free discharge from he nose is started; then repeat occasionally to keep them running freely. If they gather under the jaw, open with a knife as soon as they are ripe, which is as soon as the lump becomes soft. To hasten the gathering, apply under the jaw or throat a poultice of hops and bran. If this simple treatment is effectually carriedout, nsing goods anitary means to keep the patient warm and dry in the winter, feeding soft food with the Condition powder, and in summer allowing free access to grass, the chances are that you will not lose one horse in a lifetime with these diseases.

EPIZOOTIC — PINKEYE.

This is a contagious disease that occurs occasionally in an epidemic form throughout the country, and kills or injures a great many horses.

Symptoms: The attack is usually sudden; the horse droops its head and ears, and stands with back arched and legs braced as if to bring relief. These symptoms are always accompanied by a hoarse, dry cough, rapid breathing, scanty, high colored urine, and hard mucus covered dung.

Treatment: Bathe the throat, chest, and over the lungs well with mustard, mixed in water, and cover well with a cloth or blanket; give the Condition or Cleansing powder in soft food; smoke as in distemper once a day, and take

Tincture of Gentian Root;
Tincture of Iron;

equal parts; give on tongue three times a day a teaspoonful, use moderately in warm weather or turn out for exercise, and place all feed on the ground, which will cause the horse to keep its head down, thus giving relief. This disease being contagious, it is best not to bring the sick animal in close contact with the well; and by thoroughly cleaning the stable, using asafœtida in the troughs, and feeding the Condition or Cleansing powders once a day to the well horses, it can be prevented from spreading.

HEAVES.

Heaves with the horse is similar to the asthma in the human family. It can be discovered by the difficult breathing, wheezing and frequently the cough. It is caused by feeding too much hay, especially dusty or clover hay. This statement is confirmed from the fact that it is seldom known in the West where clover is not used.

Treatment: Feed good, sound grain, sweet timothy hay, prairie hay or corn fodder, and give indigo water to drink twice or three times a week. A piece of indigo the size of a hickory nut in one gallon of water, or use

Powdered alum, one pound;
Oil of origanum, two ounces;
Arsenic, one-half ounce.

Dose, teaspoonful twice a day; or *smartweed juice* given as a drench, one-half pint at a time, twice a day for a few days is excellent.

GLANDERS.

The best treatment for this fatal disease is to lead the patient to some suitable burial place and destroy it. Then thoroughly disinfect the entire premises by cleaning up every possible thing and using whitewash

and carbolic acid freely. No pains should be spared, as this disease is highly contagious to both man and beast.

BRAIN FEVER, BLIND STAGGERS.

Diseases bearing these names are but different stages of the same disease. At first the brain only is oppressed, but as the animal grows worse, the brain becomes highly inflamed, causing the horse to become frantic; hence, it is called *Blind, or Mad Staggers.* Cause: An over gorge of grain, or anything that will cause a severe case of indigestion, thus deranging the stomach, which effects the brain. Symptoms: At first the horse will stand with his head down, and often pressed against the wall or fence; eyes closed; ears and tail droop; skin cold; nasal membrane of a dark color, and breathing laborous. As the disease grows worse, the eyes will brighten, the nasal membrane will redden, the skin becomes hot, and the breathing becomes rapid and sharp, while every movement is quick and jerky. In this stage the animal is mad and frantic. Treatment: The first thing to be done is something that will quiet the animal; for this purpose give the usual dose of the *Colic Cure*, and if the symptoms indicate a severe case, *double the dose.* In absence of this, bleed freely from the neck or mouth. Either of these methods have a tendency to relax the system, which will give relief. Then follow this treatment with a good physic; for which there is nothing better than

Fresh Lard, or Raw Linseed Oil.

a quart at a dose, given as a drench. Then give as an injection,

Warm water, one gallon;
Turpentine, one tablespoonfull:
Soap, enough to make a suds.

If relief is not obtained in three or four hours, repeat the drench and injection.

PARALYSIS, SPINAL MENINGITIS.

This disease generally, partially effects both hind legs, making the gait unsteady. A horse thus afflicted is past his prime; they may be patched up so they will do for slow work, but any severe use is liable to cause the disease to reappear. Treatment: Feed well with soft and light food—good oats, barley, bran, and if possible, grass; in absence of grass feed raw potatoes. Groom thoroughly several times a day, brushing the hind quarters vigorously with a coarse brush; cover the small of the back with a

Wet flannel cloth;
Over this put an oil cloth,
Then a piece of blanket.

Keep the flannel cloth wet all the time with cold water, and avoid any active exercise. Night and morning give a ball made as follows:

Flour, two tablespoonfuls;
Tartar Emetic, one-quarter teaspoonful;
Golden Seal, one heaping teaspoonful;
Molasses, to make a stiff dough.

Continue treatment until the animal has recovered sufficient to warrant its discontinuance.

HOW TO BLEED A HORSE.

In order to bleed a horse from the neck, take three feet of strong, hard-twisted cord and form a loop at one end; stand on the left side of the animal and pass the cord around its neck, about one foot from its ears, having the loop on top; pass the end of the cord up through it and pull downward until the cord becomes very tight around the neck, which will cause the juglar vein to fill and extend out so it can be seen very plainly. Now take a lance, or in absence of this, wrap the large blade of a pocket knife with a cloth or cord, leaving about one-half inch of the point bare, which must be very sharp; set this or the lance on the ex-

tended vein, holding it with the left hand, while in the right take a hard stick about the size of a hatchet handle, and strike the lance or knife-blade sufficiently hard to drive it into the vein, which will cause the blood to flow freely. Draw one gallon or more of blood, as the case may require; and when wanting to check the bleeding, loosen the cord; insert a pin through both sides of the cut and fasten it together with a hair from the tail or mane. Carefully remove the pin the next day and oil the cut, which will soon heal. In order to bleed from the mouth, take a sharp-pointed knife blade and, insert it into the second ridge in the roof of the mouth. Do not cut any higher than the second ridge, as it may cause the animal to bleed too much. In order to check the bleeding, feed dry bran or hold tea grounds or the scrapings of a linen cloth on the cut.

FISTULA AND POLL-EVIL.

These terrible diseases of the horse are of frequent occurrence and very annoying and hard to cure; but the treatment given here can be relied upon, or at least it has been successfully used in many instances and highly recommended.

Fistula appears at the top of the shoulder-blade, and on either side or both at the same time, and also occasionally on the hips.

Poll-evil occurs on top of the neck just behind the ears. Both these diseases are caused by a bruise.

Treatment: When they first make their appearance they can be observed by a swelling and soreness; and up to the time that matter begins to form, the *corrosive liniment* will be found very effectual to drive it away. (See prescription how to make it.) This is a powerful medicine, and in using it the horse must be fastened so that he cannot rub or bite the affected parts, as it will burn for a minute or two. Apply

every morning with a small mop for some three days, and then take *fine powdered gun-powder, mix heavily in lard,* grease the part well and let go three days. Repeat the treatment over as given three times. If this fails to cheek it, the treatment will have to be changed, and one used to cause heavy suppuration. In using the corrosive liniment do not wash the affected part. To cause suppuration use the *May apple liniment.* (See prescription.) A thin coating of ths should be spread over the affected part every morning and carefully washed off at night, and then greased. This treatment should be continued until matter forms, and as the pus begins to ooze out increase the amount of liniment; and the length of time between dressing up to twenty-four hours, but not longer. This treatment should continue for some three weeks, always cleansing thoroughly with warm soap suds before dressing.

In some three weeks after using the *May-apple liniment,* omit the use and make a liniment as follows:

Turpentine, one and a half ounces;
Croton Oil, one-half ounce;

Cleanse the wound thoroughly with warm water and castile soap, and apply this liniment with a feather internally until healed.

BOND, BOG OR BLOOD SPAVIN AND THOROUGH-PINS.

These are ailments of the hock joints, and are hard to do anything with, but with time and close attention they can often be partially cured.

Treatment: Use the *corrosive liniment* as given for fistula; continue treatment as directed — that is, apply the liniment three days, then grease once and let go three days. Continue this for three or four weeks; then discontinue for two weeks after which repeat again if necessary. Meantime feed soft, light food, and the Condition powders occosionally; turn loose in a box-

stall or use at slow, moderate work. Where this treatment fails have it properly treated by fireing or fatten and dispose of. Beware of bogus quacks offering to cure these blemishes.

RING-BONE AND CURBS.

Ring-bone is a bony substance or growth that appears just at the top of the hoof, and generally extends entirely around it. It is caused by a sprain, and, if noglected, makes the horse very lame, and soon becomes hard and difficult to remove.

A curb is a hard, bony substance on the back part of the leg just below the hock, and the same may be said of it as of ring-bone.

Treatment: For ring-bone, the same as spavin. Another good preparation is

Corrosive Sublimate, one ounce;
Spanish Fly, one ounce;
Venice Turpentine, one ounce;
Lard, six ounces.

Mix well, and apply once a day.

For curb, if the affected part is feverish, first reduce the fever by applying the *cooling lotion*, (see recipe,) then bathe with the *corrosive liniment* once a day, then wash with soft soap and hot water; continue treatment for a week, then leave go a week; and if necessary repeat the treatment. This same treatment will remove any splint or callous.

CRIBBING — WIND-SUCKING.

This strange habit of catching hold of some object with the mouth, and sucking wind is very common, and no cause can be attributed for it, and no effectual cure. Some prevent it by buckling a strap tightly around the neck, and others by running a fine saw between the front teeth, but a horse of this kind is frequently subject to colic and should be avoided.

LAMPASS.

This is something that horses, and especially colts, are troubled with a great deal. It is simply an inflammation of the muscles in the front part of the roof of the mouth, that have the appearance of ridges or bars. Treatment: Puncture them well with as harp knife, and bathe with copperas water.

SCRATCHES AND GREASE HEEL.

These are two of the dreaded diseases of the American horsemen, although similar in their characteristics, grease heel is the most obstinate to cure. They appear on the back part of the leg, extending from the heel of the foot to the fetlock, and in extreme cases often reach up to the knee or hock. The scratches begin with a scabby covering of the skin, coming in patches and continuing to spread until the leg is one mass of sores.

Grease heel commences by the flesh bursting open, and an offensive matter oozing out. If neglected it spreads rapidly and becomes very sore.

Treatment: Wash clean with soft soap and dampen affected parts with *Dexter Liniment* for three days, after which grease with lard and gun powder. This will cure any case if kept out of water and mud. Dry snow will not injure it, but rather will be of an advantage in reducing the fever. In all cases turn on grass, or feed soft food, and use the condition or cleansing powders, to cleanse the blood and system. *Sulphur and sweet oil*, mixed to a thin salve, is also an excellent cure for scratches, mange, surfeit, and similar diseases.

THRUSH.

This is a disease of the foot caused by neglect, damp, filthy stables, and also by a bruise or injure of any kind. It often becomes very bad before the inat

tentive owner or groom notices it, which is observed by a very offensive smell.

Treatment: Clean out and pare away all the diseased part of the foot, and use the following liniment:

Oil of Cedar, one ounce;
Oil of Sassafras, one ounce;
Gum of Camphor, one ounce;
Corrosive Supplimate, one scruple;
Raw Linseed Oil, three ounces.

Apply once a day for two or three days and keep the feet dry and clean while under treatment. This will soon effect a cure, or clean out and apply *salt and wet blue clay* as a stuffing.

DRESSING TO SOFTEN FEET.

Sliced Onions, one pint;
Oil Meal, one quart;
Charcoal, one-half pint;
Boiling Water, sufficient to form a stuffing.

Stuff the feet and fasten in with a cloth poke if you have no boots. This is excellent for feet either sound or unsound; and also is valuable in case of founder.

INJURED FEET.

In case an animal injures its foot with a nail or snag of any kind, examine the foot carefully, and if possible, find and remove the article, after which clean out the foot well and apply *Turpentine or Sea Salt* to the wound; cover with a tarred rag, and be sure to cleanse and dress every day, to keep the wound open. After two or three days use the *Dexter liniment* in place of the turpentine or salt. In case of graveled foot, keep the foot encased in a poultice made of *oil meal, bran and warm water;* put this in a sack and keep the foot in it, changing fresh every day, until open; then cleanse with soap and water, and apply the *Dexter liniment* until healed.

FOUNDER, CORNS.

Frequently horses become foundered by eating an over feed of grain or drinking too much water. Symptoms and effect: So stiff that they move about with great difficulty, and if not properly treated at once, it so affects the feet that it causes them to contract and become wrinkled.

Treatment: Bleed freely in the neck and in the small warts under the pastern joints. Take

Powdered Alum, one-fourth pound;
Sunflower Seed, two ounces;
Jimson Seed, two ounces;

Mix, and give a dose of one tablespoonful twice a day for two days. If the pastern joints become inflamed and swollen, use sweating liniment. (See recipe.) Feed oats and bran mashes, with Condition powders and new potatoes in absence of grass, and apply the foot dressing to the feet for a week or more.

For corns, pare out the foot well and apply the dressing or foot oil until all soreness is removed.

SWEENEY—ATROPHY.

What is known as sweeney is located in the shoulder or hip. It is frequently caused by a sprain or wrench, in some way injuring the muscular tissues, and sometimes by diseased feet, which cause the muscles of the shoulder to perish for want of exercise.

Treatment: Apply twice a day for several days the liniment made as follows:

Oil Origanum, four ounces;
Oil Hemlock, four ounces;
Oil Spikenard, two ounces;
Oil Sassafras, two ounces;
Chloroform, three ounces;
Powdered Camphor Gum, two ounces;
Olive Oil, six ounces;
Alcohol, one quart.

Mix, and shake well before using.

Give quiet work or turn out for exercise, and keep the skin loose by pulling at it every day. Some cure this by taking an old and well-smoked hog joal, fry it out, and in the grease obtained mix gun-powder, and grease with this.

SPRAINED TENDONS.

The horse is liable to sprains of the tendons by accident, fast or reckless driving. Symptoms: Soreness and lameness.

Treatment: Apply hot water to remove the fever, then use the *Dexter liniment*, which will soon effect a cure.

SWELLED LEGS AND ANKLES.

This is caused by the feet being diseased, or by impoverished blood, which is caused by improper food and care.

Treatment; Put the system in good order by the use of proper food and the *Condition powder*, and bathe the legs with strong copperas water. If the feet are diseased treat them as for thrush, or apply the foot dressing.

SURFEIT, MANGE AND FARCEY.

These are skin diseases caused by a weakened condition of the system or blood. Symptoms: With surfeit and mange spots or lumps appear upon the skin, which cause a severe itching and rubbing.

Treatment: Use the *Cleansing powders* with soft food to put the system in a healthy condition, and for surfeit or mange take

Coal oil, one-half pint;
Lard, one-half pint;
Carbolic acid, one tablespoonful.

And oil the affected parts once or twice a day; or use the *Dexter liniment*. Water farcey is a swelling that appears on the under part of the belly. It frequently gathers and water oozes from it.

Treatment: In mild cases treat the same as for mange, or bathe with hot, strong salt water; in severe cases use the *corrosive liniment, gun-powder and lard* as recommended for fistula. Horses thus effected should be kept apart from others, and avoid using the same curry-combs and brushes.

LICE.

Horses sometimes become very lousey, and will do no good so long as these annoying pests are allowed upon them. Symptoms: Hair looks rough; they become thin in flesh and are continually rubbing themselves, especially their necks and manes.

Treatment. Take coal oil and lard, equal parts; to this add a small amount of sulphur, and grease them well in and under the mane, around the neck and along the back, also upon the parts where they seem to rub or bite themselves, as that is a sure indication that lice are upon those parts. Some bathe horses with tobacco juice in order to rid them of lice; but this is dangerous, especially if the juice is made very strong.

HIDE-BOUND.

This occurs when a horse becomes poor and the system entirely deranged. Cause: Neglect and bad usage.

Treatment: Feed well with good soft food and use freely the *Cleansing powder*, and if possible give grass and special attention to grooming.

SADDLE OR HARNESS GALLS OR BOILS.

These are so frequent and annoying to both horse and man that the proper treatment for them is of value.

Where the horse can be allowed to go idle it should be done until well, but where this cannot be done then other means must be resorted to. First, the saddle or harness should be so padded as to take the bearing off

the affected parts. Then wash clean with warm salt water and bathe with *Dexter liniment* and *meat fryings or pudding grease*, equal parts, which will heal any common gall; or paint over with *white lead*, or cover with a *court-plaster*. Where a large collar boil has formed, cut it open and cleanse it out with warm water, then bathe it internally and externally with the *Dexter liniment*, by the use of a feather. A cheap application for bruises and galls, and to reduce external inflammation, is a

Decoction of smartweed, two pints;
Strong cider vinegar, one pint.

Make hot, pour over bran and apply as a poultice as hot as the horse will bear.

BLIND OR WOLF TEETH.

This is something that occurs with most all young horses; a small tooth that comes out by the side of the jaw tooth. Some people have great fear of them, thinking they cause weak eyes or blindness. Whether this is true or not, they are of no use and are better out than in. They can be very easily removed by the use of a pair of strong nippers; or, take a flat iron about a foot long with a notch in one end; set this against the tooth so it cannot slip off, and strike the iron with a hammer, but not too hard. This will loosen the tooth so it can easily be removed. Occasionally a horse has a tooth that wants removing, as it is decayed or injured in such a way that it is annoying to the horse. Frequently their teeth need dressing, which any good veterinary surgeon can do, or you can do it yourself by procuring a tooth rasp. But beware of the man who goes through the country pulling horses' teeth, and be sure the horse's tooth needs to be taken out before allowing it to be pulled.

A VALUABLE EYE WASH.

Take three fresh eggs and break them in a quart of cold rain water; stir until a thorough mixture is effected; boil over a slow fire, stir occasionally, add one-half ounce of *Sulphate of zinz* (white vitrol) to the mixture, remove and the curd will settle to the bottom, and the liquid rest on top. This liquid thoroughly strained makes a valuable eye wash for man or beast. The curd applied to the eye will draw the inflammation out. The liquid, if strained free of any sediment and bottled will last a long time. The curd can be applied to the eye of the horse by making a hood so it fits tightly over the eyes, or one eye, and cut a hole for the other. To remove inflammation or soreness caused by a blow, or otherwise, or where the inflammation has caused the haw to appear, (what a great many call hooks, and what ignorant pretenders cut out, claiming it is a disease), use the above wash and it will effect a speedy cure; or, take

Tincture of Arnica, one ounce;
Laudanum, one-half ounce;
Sugar of Lead, one-half ounce.

Bath the eyes several times a day, will remove inflammation. To remove slight inflammation take *cold salt water* and bathe the eye; or *Belladonna, one part, and water, three parts;* make fresh every time, and it will soon remove it. If you wish to bleed, *bleed below* the eye. To remove dirt, etc., from the eye, insert *flax seed.* To remove film, insert finely powdered *burnt alum*; or equal parts of *honey* and *hen's oil*, applied with a feather, is excellent.

CATARACT LINIMENT.

For a cataract of the eye, try the *egg eye wash*, or the *honey* and *hen's oil*; if these fail to effect a cure, I would recommend the following liniment:

Sweet Spirits of niter, one-half ounce;
Camphor Gum, one-half ounce;
Oil Origanum, one-half ounce;
Ammonia, one ounce;
Alcohol, four ounces;
Rain Water, four ounces.

Apply twice a day for two days with a soft eye brush or feather, and keep the horse quiet for the time. This was recommended to me by an old veterinarian to be a successful treatment, and is worth trying, for if neglected the horse is no better, if not worse, than a blind one, as it so effects the sight as to cause them to shy.

COOLING LOTIONS FOR THE LEGS.

A valuable and cooling wash for horses' legs, to be used in rubbing out race horses, or on receiving a bruise and prevent callouses, is

Chloroform, two ounces;
Alcohol, two ounces;
Golard's Extract, two ounces.

Put one-third of this in a quart of rain water, bathe and bandage the legs; walk then until nearly dry, then remove the bandages and rub lightly with the hand.

Another good and cheap one is, *Copperas, one-half pound; Rain water, one gallon,* used twice a day will remove fever and soften the skin. *White oak bark ooze*—made by boiling the bark until a strong liquid is obtained; to one-half gallon of the liquid add a *handful of salt,* and apply twice or three times a day, is also good.

A LEG OR BODY WASH.

A valuable preparation to stimulate and remove all soreness with horses when applied to the legs, loins, shoulders, or body, is,

Cider Vinegar, three quarts;
Alcohol, one pint;
Ammonia, two ounces;
Chloroform, two ounces;
Sal. Moniac, two ounces;
Tincture of Arnica two ounces.

Shake well before using; bandage the legs or cover the body with a blanket.

FOOT OIL.

Oil of Cedar, two ounces;
Oil of Hemlock, two ounces;
Sweet Oil, two ounces;
American Oil, one gill;
Neatsfoot Oil, one gill;
Barbadoes Tar, two gills;
Origanum Oil, one ounce.

Apply to frog of foot, will promote health and growth.

TO REMOVE CALLOUSES.

Strong hickory ash *soft soap* applied once a day, washing with hot water before each application, will remove most any callous or splint. For a hard and long standing case, use the *soap* and *corrosive liniment.* Another good preparation is,

Soft Soap, four ounces;
Spirits of Camphor, two ounces;
Aqua Amonia, one ounce.

Apply daily, bathing effected parts with very hot water before each application. A good general liniment to remove callous is,

Dexter Liniment, two parts;
Spirits of Camphor, one part.

Apply once or twice a day, and wash off with hot water and soap. The hotter the water the better, as it softens the skin and opens the pores.

THRUSH OIL.

Oil of Cedar, one ounce;
Oil of Sassafras, one ounce;
Gum of Camphor, one ounce;
Corrosive Sublimate, one scruple;
Linseed Oil, three ounces.

Keep the feet dry and apply once or twice a day.

MAY APPLE LINIMENT.

Make a strong syrup of May apple roots; while boiling add one-fourth as much *strong lard* as syrup;

keep stirring all the time to prevent burning; cool and put away for use. This is used for poll evil or fistula in their second stage, when matter has formed to draw it to the surface.

CORROSIVE LINIMENT.

Turpentine, one-half pint;
Corrosive Sublimate, finely pulverized, one ounce;
Gum Camphor, one ounce.

Let stand for a week, shaking every day, when it will be ready for use. Always shake well before using. Pour it in an earthen vessel and apply it with a swab —never apply with the finger. Mark it *Poison*, and keep it out of the way of children.

WORM POWDER.

Ginger, eight ounces;
Black Antimony, six ounces;
Fenugreek, two ounces;
Worm Seed, two ounces;
Capsicum, two ounces.

Mix thoroughly. Dose, one tablespoonful once a day. A change of diet is always desirable. Pin worms, which always inhabit the rectum, and occasion persistent rubbing of the tail, may be most effectually removed by an injection every morning for a week, of three ounces of *linseed oil* and one-half ounce of *spirits of turpentine;* the agents to be thoroughly blended by shaking, and injected into the rectum; or take *salty lard* and grease the inside of the anus.

WORMS IN HORSES.

The cause of the production of worms in the body is enveloped in mystery. Poverty of the system, pasturing in marshy or wet grounds, or the use of stagnant waters are undoubtedly the predisposing agents. Young animals, aged, or weekly ones, are more subject to them than stronger subjects. They are, however, often found in horses to which none of these condi-

tions apply. Worms derive their nutriment by suction from the intestinal secretions.

In some cases the presence of worms may be detected by their being excreted along with the fœces, while in other cases their presence can only be suspected by a peculiar, rough, dry, unthrifty appearance of the coat, or at other times by frequent whisking of the tail, and by some dry white matter adhering around the anus. In some cases (probably where they exist in small numbers) they seem to do no harm, while in others they appear to affect the health of the horse very injuriously.

As a general rule, when a horse has worms his system is out of order — possibly not on account of the worms, but perhaps the worms find a suitable tenement in his intestines because they are out of order — just as the mange insect will lodge in an unhealthy, in preference to a healthy skin. There is no medicine more effectual in removing worms than the Worm Powder.

FEVER POWDER.

Powdered Gum Camphor, two drachms;
Powdered Opium, one-half drachm;
Powdered Epecac, one drachm;
Cream of Tartar, one ounce.

Mixed. Dose, one tablespoonful once or twice a day. This is excellent to abate fever.

COUGH POWDER.

Pulverized Blood Root, four ounces;
Lobelia Seed, four ounces;
Licorice, four ounces;
Nux Vomica, two ounces.

Mixed. Dose, teaspoonful on tongue three times a day. This is very valuable for any cough.

CONDITION POWDERS.

For general use:

Glauber Salts, one pound;
Ginger, one-half pound;
Blood Root, one-quarter pound;
Powdered Golden Seal, one-quarter pound;
Powdered Licorice, one-quarter pound;
Sulphate of Iron, one-quarter pound.

Mix thoroughly. Dose, one tablespoonful once or twice a day, as the condition may require. This is worth a bushel of the condition powders that you buy.

CLEANSING POWDERS.

For general use in all cases of blood disorder, hide-bound, etc., it is worth its weight in gold:

Spanish Brown, two pounds;
Ginger, one pound;
Cream Tartar, one pound;
Black Antimonia, one pound;
Blood Root, one-half pound;
Skunk Cabbage, one-half pound;
Fenugreek, one-half pound;
Worm Seed, one-half pound;
Indigo, one-quarter pound;
Copperas, one-quarter pound;
Saltpeter, one-quarter pound.

Mix thoroughly. Dose, same as the condition powder.

DEXTER LINIMENT.

Oil of Spikenard, one ounce;
Oil of Camphor, one ounce;
Oil of Stone, one ounce;
Oil of British, one ounce;
Oil of America, one ounce;
Oil of Opodeldoc, one ounce;
Spirits of Turpentine, one pint.

This is the best general liniment I never knew, either for man or beast, as it is invaluable for healing sores, either fresh or chronic cases, removing collar boils, callouses, ets., with horses, and all cuts or bruises, chapped hands, burn, etc., with the human family.

Will also remove the soreness of corns or chilblains and is good for rheumatism or a weak back. In using it for chapped hands, bruises or fresh cuts with persons, take liniment one part, *sweet cream, fresh butter or vaseline*, three parts; mix well an apply.

HEALING POWDER.

Burned Alum, one-half onunce;
Powdered Chalk, one ounce;
Pulverized Gum Champhor, one drachm;
Calomel, two drachms.

Mix and sprinkle on sore; it will heal quickly, and is good to remove proud flesh.

TO PRODUCE PERSPIRATION.

Give Tincture aconite, in ten to twenty drop does every twenty minutes. Clothe warm.

SPRAINED STIFFLE OR WHIRLBONE.

Salt, one tea cup full;
Black pepper, ground, two ounces;
Spirits of Turpentine, two ounces;
White of six eggs.

Mix and apply, and heat with hot iron until dry; will effect a cure.

TO STOP FLOW OF JOINT WATER.

Crocus Martis, two ounces;
Sulphate Zinc, one ounce;
Molasses, One pint.

Apply with a swab.

Capped hock — When first injured, apply the cooling lotion three times or more a day for one week. If of long standing, apply *Dexter Liniment* twice a day, washing with hot water before each application. Blisters only aggravate the injury and thicken the skin.

CANKER, SORE MOUTH, AND TONGUE.

To cure these diseases, apply the solution made as follows:

Pulverized Borax, one ounce;
Alum, one ounce;
Strained Honey, one ounce;
Warm Water, one pint.

Several times per day, and give *Condition Powders* on tongue twice per day. Another:

Sugar of Lead, two ounces;
Bole Ammoniac, two ounces;
Burned Alum, two ounces;
Good Cider Vinegar, three pints.

Use as a wash twice or three times a day, and keep the bit out of the mouth.

SWEATING LINIMENT.

Take two gallons of mullen leaves and one gallon of rain water; boil until the juice is very strong, and use of the following:

Juice, one-half gallon;
Cider vinegar, one quart;
Salt, one-half pint;
Origanum oil, two ounces;
And one large beef gall.

Apply hot on the parts affected. This is one of the best preparations for injured whirl-bone or deep-seated sprains I have ever tried; also for caked bag (garget) with cattle or sheep. When applied, dry in with a hot iron, or cover with a blanket. The *mullen liquid, vinegar and salt* are good for swelled or inflammed udders.

TONIC PREPARATION.

To make an old horse feel young and nimble, take

Tincture of asafœtida, one ounce;
Cantharides, one ounce;
Oil of annis, one ounce;
Oil of cloves, one ounce;
Oil of cinnamon, one ounce;
Fenegreek, one ounce;
Black antimony, two ounces;
Brandy, two quarts

Mix and let stand ten days. Shake well and give ten drops to every pail of water. This is better than *ginger, whip or spur.*

Another good and cheap one is

Common soda, one pound;
Gun powder, one-fourth pound;
Gimson seed, three ounces;

Mix. Dose, tablespoonful once a day for a week, in soft food. To prevent driving horses from chilling, and contracting cold during the winter, feed them a tablespoonful of *mustard seed* twice or three times a week.

GOLDEN OINTMENT.

Lard, three pounds;
Oil of origanum, two ounces;
Oil of ceder, one ounce
Oil of hemlock, one ounce;
Balsam of fur, one ounce;
Resin, one-fourth pound.

Melt the lard and resin and mix with them the oils thoroughly; color to orange with anotta, and put in boxes while blood warm.

GOLDEN LINIMENT.

Coal oil, two ounces,
Castor oil, two ounces;
Sweet oil, two ounces;
Anotta, one half ounce.

These are excellent remedies for all kinds of sores.

CARE OF TAIL AND MANE.

In order to thicken the mane or tail, wash well with soft water and castile soap, then dampen with common *coal oil*, one part, and *whiskey*, two parts This will also prevent rubbing. Brush often with a soft brush, and see that the trouble is not caused by hen lice. To make the mane lay down smooth, or on either side, wet and brush it often, and plat or weight it.

TO RELIEVE A CHOKING HORSE.

Give as a drench one-half pint of fresh lard or linseed oil. Or, take a buggy whip, fasten a small sponge or cloth swab on the large end of it, dip this in oil or grease, and and run it down the animal's throat. A method recommended for horses choked on water, is, stand squarely in front of the animal, take a firm hold on its ears with both hands, place one foot in the hollow of its breast, not high enough to interfere with its wind. This should be done quite cautiously, and when you are ready, pull suddenly with the hands, and push with the foot. You will be surprised at the result. The water on which the horse choked must go one way or the other. This treatment will not hurt the horse, and the beauty of it is, it can be applied at any time without delay.

BROKEN TAIL.

Occasionally a horse meets with an accident that causes its tail to be broken, which very much disfigures it unless it is cared for. To do this put a good wide surcingle around them in front, and another around at the flanks. Now put a collar on the animal and fasten it and the front surcingle together by the use of straps, at the side, and on top the weathers, to prevent the surcingle from slipping back. Procure a flexible hickory or white oak splint about four feet long. Fasten this to the two surcingles, and let it project back over the tail. Bandage the tail tightly where broken, with leather, sewing the leather together on top; then elevate the tail well and fasten it to the end of the splint, by using strips of muslin. Bathe it often with water or the *cooling lotion* to keep down the fever and swelling, or apply the Golden Liniment.

LOCK JAW.

This is a terrible disease that affects the entire muscular system. Its cause cannot always be ac-

counted for, but is often caused by a wound, which may result in an immediate attack, or some time afterwards.

Symptoms: The animal is nervous and becomes excited upon the approach of any one. It stands day after day, (if it lives,) in the same position, and cannot eat from the fact that the jaws are immovable.

Treatment: Give a double dose of the *Colic Cure* in one gill of water, by drenching it through the nostrils, which can be done by elevating the head well. Immediately afterwards give as a drench

Raw Linseed Oil, one quart;
Croton Oil, twenty drops;
Calomel, two drachms.

If relief is not obtained in three or four hours repeat the treatment. If it is caused by a wound, apply the foot dressing, or an onion poultice to the wound to start supperation. As soon as the animal recovers sufficient to eat, feed soft steamed food or gruels. Often it is necessary to give gruels containing some whiskey as a drench in order to strengthen the patient.

BIG HEAD OR JAW.

This disease is prevalent in the South and west of the Mississippi River, but is not often met with in the Northeastern States. It is difficult to attribute its cause to any particular thing, but it is supposed to be caused by defective nutrition or lack of bone-producing material. Symptoms: A bony tumor or enlargement forms between the nostril and eyes, called *big head*, or upon the jaw, called *big jaw*.

Treatment: When it first makes its appearance in either place, it can be checked by treating it the same as for fistula, and giving night and morning the *Condition powder* in soft food, and once or twice a day a tablespoonful of *tincture of iron* in a gallon or more of

water. In chronic cases supperation frequently has to be resorted to. For this purpose use the *May apple liniment*, or bore a hole in the enlargement with a gimlet, then take a piece of *May apple root*, form a piece an inch or more long that will fit in the gimlet hole and insert it. This will start supperation and often effect a cure; but this should not be done unless the first treatment fails after a thorough trial. Horses thus affected, or those affected with ring-bone, curby or spavined hocks, or those whose wind is badly affected from the effects of epizootic or distemper, should never be used as breeders, especially in breeding fast horses, as such diseases are more or less hereditary, and any severe exertion is liable to cause them to appear.

PARTURITION.

The natural presentation in birth of young animals is when both fore feet are presented at the same time, with the head lying extended between them; or when both hind feet are presented, thus forming a gradual wedge with an easy delivery, rarely needing any assistance from man. In some cases one fore foot or hind foot only is presented; or the fore feet may be presented, with the head turned on the side, over the back, or doubled on the breast. In cases of this kind assistance is necessary to save the life of the dam, or at least severe injury. To give assistance, oil the hand and insert it until the knees or hocks are felt; if doubled, partially return them until they can be straightened. When the head is in the wrong position partially return it until it can be straightened, then give assistance, always aiding when the animal strains, pulling downward as well as backward. Very frequently it is necessary to attach a rope to the legs, or a hook in the eye socket or jaw, in order to give assistance, and it may then take the force of two or three men. When it is necessary to cut away the

limbs in order to save the dam, the amputation must be either at the hips or shoulders. The dissected parts being taken away, the balance will follow easily. When it is necessary to turn the young, always turn it down, not up. If flooding follows the delivery, apply cold water to the loins, and give injection of alum water. If the *after birth* is retained, oil and insert the hand and remove it with the fingers. When protrusion of the womb occurs, generally it turns wrong side out. To replace it, wash it off well with castile soap and luke warm water; oil it, then gently press from the center with the fingers, constantly working from outside to center, and it will soon go back to its natural position, and in most cases remain without any artificial restraint.

INFLAMMATION OF THE WOMB.

If this sets in it will cause shivering fits, and colicky pains, arching of the loins, vulva red and swollen, accompanied by a fetid discharge. In cases of this kind the womb is dilated with a fluid, and highly inflamed. This fluid must be drawn with a catheter, through which must be injected a wash of *warm water, one quart, and laudanum, one ounce.* When much fever prevails give fifteen drops of *aconite* at a dose every hour until relief is obtained.

DISEASES OR INJURIES OF COLTS.

Colts are troubled more or less with certain diseases, such as costiveness or diarrhœa, and those of the urinary organs, which often prove fatal. Treatment: When colts are only a day or so old, they should be closely watched to see if their passages are natural. If constipated, take a piece of *tallow candle* two inches long, split it, point one piece and carefully insert it in the anus, or give an injection of oil. If this fails to give relief, give as a drench *raw flax-seed*

oil, one gill; *croton oil*, five drops. If the bowels are loose give as an injection

Of water, one-half pint;
Laudanum, teaspoonful;
Charcoal, tablespoonful.

For older colts, increase the dose; give the mother good, sweet food of the nature the colt requires. If they cannot pass water, give one tablespoonful of *sweet spirits of niter*. In case of injury to the navel by the string being torn off too close up—causing the water to leak out—cover the navel with cotton, over which pour collodion. This will form a coating, and can be kept in place by a wide muslin bandage pinned around the colt, which should be looked after every day and not allowed to become too tight. Where the navel string is not torn off too close up, tie a string around it.

WOUNDS OR CUTS.

All bad wounds or cuts should be immediately sewed up. This is very easy to do, by putting a twitch on the nose of the horse, or in some instances hobbles may have to be put on to prevent them kicking, or else thrown and fastened; then by the use of a silk thread and a spraying needle the wound can easily be closed; after which take *lard and sufficient turpentine to cut it well*, and keep oiled, or use the Golden Liniment, which will cause the wound to slough off, and heal nicely without scarring. In a great many cases it can be quickly healed with a carbolic acid wash;

Water, one quart;
Carbolic Acid, one tablespoonful.

Keep bathed. Or by the use of arnica, which is very valuable; or

Vaseline, one ounce;
Carbolic Acid, thirty drops.

CHAPTER XXIII.

VETERINARY DEPARTMENT FOR CATTLE AND SHEEP.

SORE EYES—MILK FEVER—GARGET—BLACK-LEG—PLEURO-PNEUMONIA, ETC., WITH CATTLE; GRUB—SCAB—FOOT ROT, ETC., WITH SHEEP.

SORE EYES.

A DISEASE called sore eyes has prevailed to some extent among the American cattle of late years. The disease attacks herds very suddenly and without apparent cause, and seems to be infectious or contagious, both eyes become very sore, and frequently they go blind in one or both. It, like the epizootic with horses, spreads throughout the country and causes considerable trouble. To treat this, separate the sound from the unsound and from the building or yards where the disease has appeared. Give the affected a half pound of the Scotch Powder at a feed in wet bran once a day, and bathe the eyes with the *arnica wash* for the eye. If possible, keep the animal affected, in a dark place during the day, or attach a cloth to the horns so it will hang down over the eyes. Some bleed below the eye, or apply a fly blister to the cheek, either, or both are beneficial. Great precaution should be used to prevent the spreading of this disease among the rest of the herd, or to the sheep. With common inflammation, or injure to the eye, with cattle or sheep, treat the same as with horses.

SCOTCH POWDER.

Epsom Salts, three pounds;
Sodo, two pounds;
Ginger, one pound;
Charcoal, two pounds;
Sulphate of Iron, one pound;
Powdered Resin, one pound;
Flax-seed Meal, two pounds.

Mix thoroughly. Dose, one tablespoonful to one-half pound, as directed. This powder is very valuable to use with all kinds of stock, for the following diseases: With horses, for colds, distemper, epizootic, urinary trouble, or loss of appetite. With cattle, for hoven, dry, or bloody murrain. With sheep, for hoven, colds, catarrh, and in all cases of constipation, or dysentary trouble, inflammation of the bowels, or kidneys. Also all milk trouble, such as milk fever, garget, and inflamed bag with any kind of stock.

HOVEN.

For hoven with cattle, take

Powdered Charcoal, one-half pint;
Turpentine, one tablespoonful;
Aconite, thirty drops.

Put it in a quart of water and give as a drench. Hold the mouth open with the hand a minute and the wind will escape as from a bellows. In case the articles named cannot be had immediately, give the Scotch Powder, one pint; or, the Charcoal; or, soot from a stove, and the Turpentine as directed. For sheep use the same treatment, only one-fourth the amount.

MILK FEVER OR GARGET.

Garget, (caked bag) is one of the most common diseases among milch cows; often occurring in the spring, just after calving, or it may be induced by high feeding at other times, or even when running on good grass later in the summer; and it may be induced by efforts to dry off a cow too rapidly. Symptoms

and treatment: The udder is hot, swollen, and very tender. First one teat will become hard, then the others. The best remedy is to bathe the udder frequently with *hot vinegar and salt*, rubbing it gently with the hand; then make a fire with corn cobs or chips in an iron pot, take a large cloth, and put one end up around the udder, letting the other end hang down around the pot, thus smoking it well. One or two applications will give relief. Give in soft food one-half pint of Scotch or Condition Powder, or in absence of this, the same amount of *epsom salts* once or twice a day until the fever is reduced, then give less for a day or two as they may require it. The better plan is to adopt preventive measures. Examine the udder frequently before calving, and if it becomes filled with milk it should be drawn out. Avoid over feeding with milk producing foods; feed sparingly with fresh hay, and milk her frequently after calving.

MILK FEVER AND ITS CAUSE.

The conditions under which milk fever exists, or is caused, are various. The disease is seldom observed in the cow before the age of five years. It is more frequently found to attack animals in a plethoric condition. It more frequently affects the pure breeds than others, and is also more fatal with them. It seldom occurs subsequent to three days before calving, but occurs, as a rule, after calving, and previous attacks favor its recurrence. Although the ewe and sow are sometimes affected with the disease, and occasionally the mare, it is more prevalent with the cow than any other class of animals, and undoubtedly is a local inflammation of the womb, which rapidly extends to other parts until the entire system is affected, and true *puerperal* or milk fever ensues. Symptoms: The animal becomes restless and uneasy, the eyes are red, the horns and head hot; the cow is irritable and dashes

her head about, sometimes with such force as to break her horns.

Treatment: The disease is not to be trifled with. As soon as the symptoms are noticed give as a drench

Epsom salts, one pound;
Raw linseed oil, one pint.

As the bowels must be opened. Cover the entire body with a wet sheet or blanket and give the *colic cure*, thirty drops at a dose every half hour until relief is given If necessary, repeat the dose of *salts* and *oil* in two hours until relief is obtained. Then feed soft food with the Scotch powders as they may require it. If their bowels are loose and regular it will require but little, if not, use it freely. Keep the milk drawn off by milking often. A pint of *raw linseed oil* given the day before calving will prevent this dreaded disease. Another cure, which Mr. William Hartley, of Wisconsin, says he has used with good success, is

Lard, one and one-half pints;
Coal oil, one-half pint;
New milk, warm, one pint.

Mix and give as a drench, and repeat in two or three hours. It has never failed to effect a cure in the ten cases I have known it to be used." This, no doubt, is very good and worth trying, especially where the other cannot be adopted, as others, as well as Mr. Hartley, say they have used it with success.

ABORTION WITH COWS.

Abortion or premature birth among cattle is considered a disease, and by some a contagious one. The calf is invariably lost, and not infrequently the cow. If the cow survives, she is almost sure to drop her next calf at about the same period. Some have great faith in preventing this and other contagious diseases with horses and cattle by keeping a *goat* about the barn. I have more faith in *asafœtida* given in teaspoonful

doses once or twice a month. Asafœtida is known as a powerful antispasmodic, preventing convulsions, spasms and other nervous diseases. A month before the expected return time, in case a cow once loses her calf, it may be well to give her and other ones that are heavy with calf, some attention, for where this occurs, very often it is on account of some local trouble, and calls for a change of food and care. If a cow slinks her calf she, as well as all evidence of the trouble, should be removed from the rest of the herd at once.

COW POX.

This disease may appear spontaneously among the cows on the farm or in a neighborhood, or may be communicated by the hands of the milkers from one cow to another. It seldom proves fatal, but, while it lasts, it may occasion considerable inconvenience, on account of the discharges and the inflammation of the bag and teats, which often occur in this disease. In the beginning of the disease, give soft and cooling food, and a laxative of half a pound of *Epsom Salts*, or the *Scotch powder* to purify the blood. Bath the udder with warm *vinegar and salt*, and smoke as for garget. The milk should be drawn often, and, on account of the great soreness of the teats, as well as to avoid injuring or breaking the skin, the milk should be withdrawn by means of a *milking tube*, carefully inserted. After the milk is drawn, bathe the sores with *Golden Liniment* or *raw linseed oil*. To prevent it spreading, always milk the affected cows last, or wash the hands well before milking other cows This is something that is more or less troublesome in every dairy, and with farmers that keep very many cows.

CHOKE.

When an animal is choked, very frequently it can be told where the choke is, by its action. With high

choke, the animal holds its head very high and often strikes with its front feet; while with low choke, it holds its head lower and keeps more quiet. Treatment: Give as a drench some oil, then, if possible, get the animal to eat some soft, wet food. This will cause it to swallow, and thus often remove it. If this fails for high choke, very often, if it is an apple, it can be felt, and mashed by holding some solid article against it on one side and striking it with a mallet on the other side, or by taking the large end of a buggy whip and fastening a sponge or cloth swab to it, dip this in oil, and push it down the throat. In fact, this is about the only remedy for low choke. To prevent choke, be careful in feeding apples, roots, or pumpkins, and keep the cattle out of the apple orchard.

EGAT, SMUT POISON OR MURRAIN.

These diseases are of frequent occurrence with cattle, and often prove fatal, either by permanent injury or death. In the corn growing districts they occur more frequently in the fall of the year than any other season, and the probability is, that nineteen out of every twenty of such cattle so found dead, died from one or both of two prominent causes with which smut was not even remotely connected One of these is the gorging of the animal's stomach with an enormous quantity of highly stimulating food, much of it difficult of digestion, directly after their having been kept on meager, frost-bitten pasturage, or the scant nourishment of a straw stack, which was to tide them over from grass to such time as the corn would be out of the field. Such a sudden and violent change could scarcely do otherwise than dimoralize the entire digestive system, and death, equally sudden, violent, and unlooked for, ensues. The other prominent cause is the eating largely of dry, frosted grass, forest leaves, or the woody, fibrous corn stalks and shucks — more es-

pecially the former — later in the season when the better portion of the food has been consumed and but little else remains, and insufficient water is taken to soften and float it up, as it must be before the process of digestion can be completed; the mass comes to a stand-still, owing to impaction, forms a sort of blockade in the manifolds of the third stomach, inflammation sets in, and the animal becomes very sick, and often past help.

Treatment: As soon as the trouble is observed, which can be told by the animal separating from the herd, becoming restless, lying down, then arising and moving slowly about, standing with a staring look, suddenly starting forward, and in doing so, often fall upon its knees; something must be done immediately if you wish to save the animal. The first result to be obtained is a physic. This can be obtained by giving

Lard, one quart; or
Raw Linseed Oil, one quart; or
Brewers' Yeast, one quart; or
Epsom Salts, one pint, and
Raw Linseed Oil, one quart.

Either preparation given as a drench. The latter I consider by far the best. If the animal seems to be suffering with much pain, give the usual dose of the *Colic Cure*, or twice the amount of laudanum. In case there is any suspicion that the other cattle are affected, give the Scotch powder in soft wet feed twice a day for a day or two, to prevent any further trouble.

BLACK-LEG

Is a contagious disease that occurs among young cattle occasionally, often destroying whole herds, and spreads over an entire neighborhood unless such means are used as will check it. One of the peculiarities of the disease is that it generally attacks the most thrifty animals first. It is a very fatal disease; the animal

often being found dead in the field before notice has been had of its being sick. There is no doubt but what it is, to some extent, caused by the same cause as murrain.

Symptoms: High fever, lameness, excessive tenderness of the skin in spots, with deposits of black tar like blood, and gas among the tissues, which give forth a crackling sound when the spot is pressed upon by the hand. The disease takes different forms, sometimes a bloody discharge oozes out of the sore, while again they dry up and crack open, or it may take an internal form, with bloody discharges from nostrils, dung or urine, the same as one form of the swine disease, and like it, soon proves fatal.

Treatment: Like cholera, swine fever in its worst form, but little can be done for it, except to treat the more mild cases, and adopt such measures as will prevent its spreading. Separate the sick from the well ones, and bury the discharges of the sick, and burn the carcasses of the dead. Give the well ones soft food twice a day, in which use the Scotch powder. Some recommend inserting a *seton* six inches long, wet with turpentine. Discontinue any treatment as soon as the danger is past. Give the affected ones the Scotch powder in larger doses, and also insert the *seton* wet with turpentine and bathe the sores or any swoolen parts with any good stimulating liniment, and avoid the use of the milk or meat of all affected animals.

FOOT AND MOUTH DISEASES.

Frequently cattle are troubled with sore feet and mouths; become very lame or weak, and, if allowed to go uncared for, soon depreciate in flesh, or milk, and in that way prove a loss to their owner. With sore feet, the animal is generally attacked in the hind feet first, and they become very sore between the hoofs which

can be observed by the animal shaking the feet and refusing to stand upon them.

Treatment: Clean and keep dry and apply the wash the same as for rot in sheep, or the *Dexter liniment.* Or run boiling hot tar into the sore, repeating every day until well.

Treatment for sore mouth, the same as for sore mouth with horses.

PLEURO-PNEUMONIA.

This terrible disease among cattle, which has caused a loss of many millions of dollars among the cattle raisers of some of the foreign countries, has begun to gain a foot-hold among the dairy districts of America, and is to be feared as much or more than the swine plauge. It is c used by a paracite germ, the same as other contagious diseases, and by damp, filthy stables and yards, and is very contagious, and certain death. There seems to be no mode of treatment yet discovered, that proves successful, except to kill the affected animals and disinfect the stables and premises thoroughly; then quarantine the farm or neighborhood to prevent any animals that may have been exposed to the disease from being sent abroad. This is a sensible, effectual and lawful way of contending with this dreaded disease, and one that should be thoroughly enforced by the American people before it has gained a strong hold, for then it may be too late.

HIDE-BOUND.

With a poor and dilapidated, or hide-bound cow brute, treat the same as for a horse in the same condition. Feed well with rich soft food, and use twice a day the Condition or Scotch powders to cleanse the blood, tone the system, and aid the digestive organs. If in the winter or early spring, a good warm dry stable will be found to be very beneficial.

URINARY TROUBLE.

Cows are just as much subject to urinary trouble as horses, which can be told in the same way by their repeated efforts to stale, but unable to do so. To treat this give as a drench, *sweet spirits of niter, one ounce; water, one pint,* and use the Condition powder in soft feed.

SCOURS WITH CALVES OR LAMBS.

To check this trouble, take sweet milk, put it over the fire long enough to come to a boiling heat. Let it cool to blood heat, to one gallon of the milk add a *cup of wheat flour, one tablespoonful of ginger,* and one *fresh egg.* Give as a drink twice or three times in one day.

GRUB IN SHEEP.

An intelligent shepherd gives the treatment for this trouble, which he guarantees to work, if the sheep are not to far gone: As a cure, pour a few drops of turpentine in their ear; and to prevent this trouble, every year about the first week in June, tar their noses well, and give them a tablespoonful of the tar internally Repeat the operation in July, August and September. If this advice is followed there will be no trouble with the grub. For catarrh, use the Scotch powder once a day for a short time, and give the sheep good dry quarters and good feed.

THE MAGGOT.

The maggot, so called, is a formidable enemy of the sheep. The eggs that form them are deposited by the common blue fly. When sheep are wounded by acci dent, or are allowed to become filthy when troubled with diarrhœa, the eggs or larva are deposited in vast numbers; the maggots soon become active, and spreading from their quarters attack the skin, which they irritate and cause the secretion of a serious fluid In time the skin is pierced, and the flesh supparates and wastes away, being devoured by the multitude of mag-

gots which crawl upon it. In wet seasons the mischief is greatly increased. To prevent them it is necessary to carefully remove the wool from about the tail, so that filth may not gather; watch for any accidental wound, and in warm wet weather, for any dirty tags of wool upon which the flies may deposit eggs. In case any maggots are found, there is no better application than common *crude petroleum and turpentine*, both of which are repulsive and fatal to fly and maggot. A sheep that is "struck" with maggots will remain separate trom the flock, and may be lost sight of unless the flock is counted and the straggler found. Weaning time, when the ewes may suffer from caked udder, is an especially critical period; then extra watchfulness is called for, and the udder should be bathed with *lard and camphor*.

SCAB IN SHEEP.

Scab or itch with sheep is a contagious disease that shepherds have to contend with in all sheep growing districts. It can first be observed by the sheep rubbing against any projecting body within reach. As it becomes worse, the sheep bite and scratch themselves until they become raw in places. Upon examination white or hard spots will be found, often from which a yellow substance oozes out, and adheres to the wool. There is no treatment that will prove effectual, except one that will destroy the parasite and the eggs; the best treatment for this is a strong decoction of *tobacco and sulphur*, used as a dip or wash at blood heat. This, if thoroughly applied once or twice is an effectual remedy. And with small flocks, where they can be handled, the mixture of *lard, coal oil and carbolic acid*, as spoken of in this work, for surfeit or mange, thorougnly applied, will quickly effect a cure.

In making the tobacco mixture, good tobacco should be used, either the stems or the entire plant, and the

mixture should be made moderately strong, with both tobacco and sulphur, and thoroughly applied It is utterly needless for a careless sheep owner or superintendent to attempt to cure scab, or any other contagious disease with animals; but those, however, who will take the necessary pains, can always exterminate most any disease. To rid the flock or herd of any contagious disease, the dead should be destroyed by burying deep or burning them, and the premises as thoroughly renovated as possible.

Ticks on sheep can be destroyed by the aforenamed treatments.

HOOF OR FOOT ROT.

Hoof or foot rot in sheep is another very contagious disease that sheep men have to contend with, and which is very hard to exterminate. It maintains itself year after year alike on wet or dry land, and cannot be eradicated except with considerable labor and skill Anyone buying sheep should always be on their guard for this annoying and contagious disease, and upon no consideration whatever allow sheep brought upon the farm that are affected with it or that show lameness. To cure this disease, clean and pare the feet thoroughly, and apply a strong solution of *tobacco* and *blue vitrol* with a mop; or prepare a sufficient quantity in a long, narrow trough and walk them through it. Keep the feet clean and dry, and repeat the operation once or twice within a week. The preparation of the foot is just as essential as the remedy, for if every part of the disease is not laid bare the remedy will not effect a cure. A strong solution of blue vitrol and tobacco, made as hot as the hand can bear, having the liquid three or four inches deep, or deep enough to cover all the affected parts will, by holding the diseased foot in this liquid long enough to penetrate to all the diseased parts, and keeping the sheep on a dry

barn floor a few hours to give it a chance to take effect, is said to be a sure cure when the foot is thoroughly prepared.

Fields that diseased sheep have been running in should not be used for sheep for some time, and it would be better if they were cultivated before being used for that purpose again. Prevention is better than a cure, and the diseases and parasites to which sheep are subject can be prevented more easily than they can be cured after they once commence their depredations on the flock. Want of care is the prolific cause of accident and disease among stock. The master's eye or the owner's solicitude are proverbially preventatives against trouble or waste; but if the master or the owner will not trouble himself to exercise the watchful care needed, we may be sure no one else will

In closing this work I respectfully invite all honest criticism, as well as correspondence and patronage, and will cheerfully furnish reference to all who may desire it, of the many I have worked for or sold my book to; and, as they belong to the enterprising stock-growing people of this country, they can be relied upon in their evidence.

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